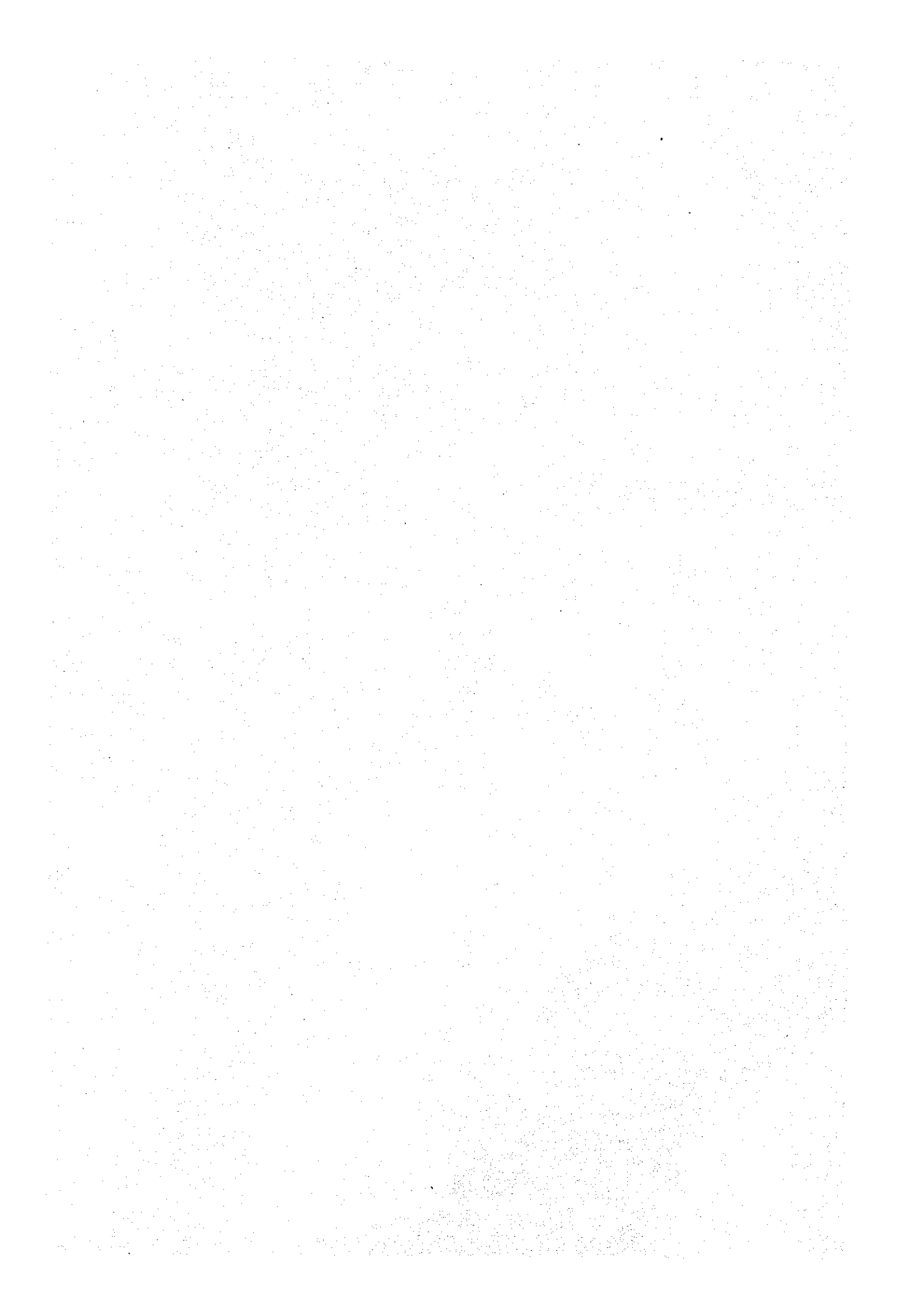


No. 111

Interim Report on Cooperation in Study  
(Chemical and Pharmaceutical Study on Herbs)  
with Paraguay

Japan International Cooperation Agency

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(Chemical and Pharmaceutical Study on Herbs)  
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## Preface

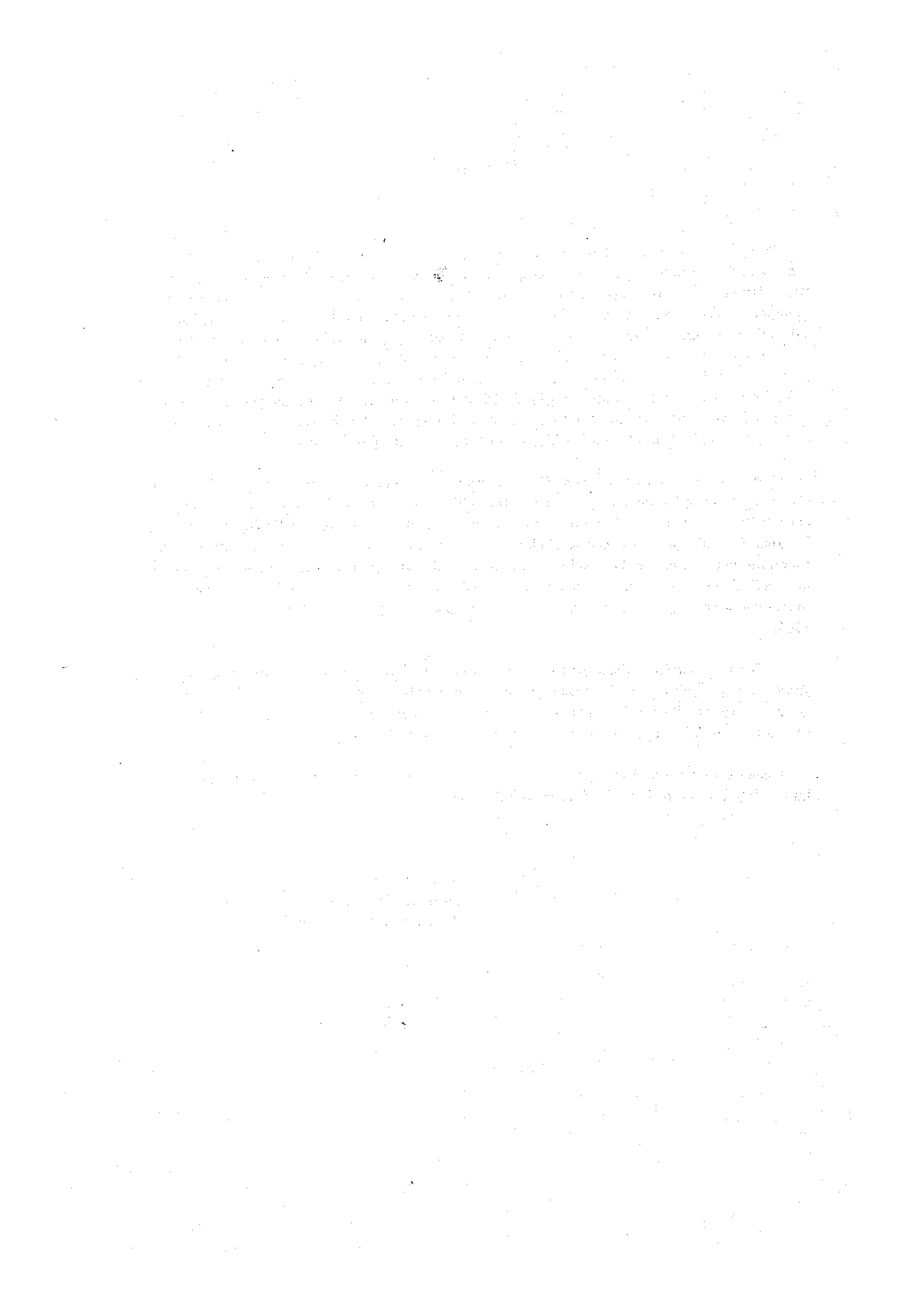
Paraguay is not only well-known for a pro-Japanese country in South America but also famous in the world for a treasury of herbs. The country is the place of origin of a "Sweet herbs, Stevia" (it is said of sweetness 300 times as sweet as sugar) which has become recently cultivated in Japan, where yerba mate, which has been sold as a refreshing beverage, and herbs, which are said efficacious against various internal diseases, abundantly grow wild and have become utilized for traditional purposes. However, the scientific study on the efficacious components of these plants has hardly conducted, so all such precious treasures have been left covered. On the other side, Paraguayan intelligent people, stimulated with the fact that the development of artificial sweetener from aforesaid stevia has been proceeded in advanced countries such as Japan, have strongly urged the necessity of utilization as well as protection of herb resources.

Under the circumstances, the National Asuncion University demanded the Japanese Government for the technical cooperation in the field of herbs in 1984. In reply to the demand, our department dispatched a preliminary survey group headed by Professor Naokata Morita of Toyama Medical and Pharmaceutical Sciences University in December 1984, to survey the actual condition, needs, etc. As the results, it was concluded that this technical cooperation would be most effective if it was practised in form of the "cooperation in study", hence the first cooperation in study between Japan and Paraguay was started upon the signing of an R/D in April next year, 1985.

I offer my congratulations for that several accomplishments have been already realized successfully owing to the enthusiasm of all research scientists, from the leader Professor Morita down, and to the effort of Paraguayan counterpart personnel, though the study did not proceed smoothly in the beginning, due to the occurrence of unexpected obstacles,

I hope the purpose of this project will be accomplished as expected on basis of well-built human relations in the latter half of the project period.

Yasuo Kitano  
Director of Experts  
Assignment Department



# Interim Report on the Cooperation in Chemical and Pharmaceutical Study on Paraguayan Herbs

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# **In Presenting the Interim Report on the Chemical and Pharmaceutical study on Paraguayan Herbs**

Team leader Naokata Morita  
Professor of Faculty of  
Pharmaceutical sciences,  
Toyama Medical and Pharmaceutical  
University

## **1. Progress of execution**

The agreement on technical cooperation between the Japanese Government and the Paraguayan Government was enforced since July 24, 1982, whereby various technical cooperations have been executed till today with successful accomplishments. Furthermore, the project of chemical and pharmaceutical research on Paraguayan herbs has become to be newly added to this agreement. Prior to the practice of this project, the preliminary survey was intended, whereby a survey mission was dispatched from Japan.

The preliminary survey was carried out from December 17 to 24, 1984, in which Naokata Morita, Professor of Toyama Medical and Pharmaceutical University, Masao Yoshizaki, Associate Professor of same university, Hiroteru Oikawa, Administrative Official, Medical Education Section, Higher Education Bureau, Ministry of Education, and Hisaaki Niwa, Deputy Chief of Dispatch 2nd Section, Japan International Cooperation Agency visited Asuncion University, widely discussed five times on the spot, observed facilities and equipment in the university, and confirmed to carry out on following themes. Under the confirmation, Paraguay was again visited for signing of R/D. In the Asuncion university, two representatives of both countries respectively signed R/D on April 17, 1985, whereby this study has become to be conducted since April 1985.

## **2. Purpose of study cooperation and its background**

The eastern area of Paraguay, holding 40% of the country area, is an outstanding fertile land in the world, where several thousand species of plants are said to be growing. This area is called a treasury of herbs in the world, where many herbs have been found, which have been handed down through the long history and lives of Guarany Indios, and efficacious to various diseases (for example, diabetes, arterial sclerosis, liver disease, heart disease, kidney disease, etc.). However, so-called pharmacognosical study on these traditional herbs such as plant classification, morphology and survey, as well as chemical and pharmaceutical study on effective components have been so delayed in this country that the Faculty of Chemistry and Pharmacy of Asuncion University and the Faculty of Pharmaceutical Sciences of Toyama medical and Pharmaceutical University have become to conduct jointly the cooperative study to elucidate Paraguayan herbs scientifically. Pursuant to the collaboration, equipment and materials will be furnished from

JICA, experts be dispatched from Japan, and further the training of c/p received from Asuncion University will be carried out, thus the technical cooperation for study will be executed.

### **3. The term of study cooperation**

Form April 1, 1985 to March 31, 1988 (Three years)

### **4. Organization to conduct the study**

Japanese side: Medical resources course, Faculty of Pharmacy,  
Toyama Medical and Pharmaceutical University  
Herbal Garden belonging to the University

Paraguayan side: Reserach Division, faculty of Chemistry and Pharmacy,  
National Asuncion University

### **5. Themes of study**

- i. Survey of medical resources and plant classification
- ii. Chemical and pharmaceutical study of herbs (biological test of extracts, extraction and separation of components, and pharmacological study)
- iii. Study on the breeding and cultivation of herbs, and institution of a herbal-garden and a herbarium
- iv. Study on the quality control of crude drugs.

### **6. Constituent personnel and their specified field of study**

#### **A. Japanese side**

- i. Team leader, Professor of the Faculty of Pharmacy,  
PH. D. Naokata Morita, Pharmacognosy , and medicinal plants
- ii. Associate Professor of same faculty,  
PH. D. Masao Yoshizaki, Pharmacognosy, botany and cultivation
- iii. Associate Professor of same faculty,  
PH. D. Mineo Shimizu, Phytochemistry

- iv. Assistant Professor,  
PH. D. Munehisa Arisawa, Phytochemistry
- v. Assistant Professor,  
PH. D. Toshimitsu Hayashi, Phytochemistry
- vi. Assistant Professor,  
Agr. D. Shoichi Suzuki, breeding and cultivation
- vii. Technical Official of same faculty,  
Yoshiaki Tatsuo, Cultivation
- viii. Professor of the Faculty of Medical Sciences,  
M.D. Suehiro Nakanishi, Pharmacology
- Assistant Professor of same faculty,  
M. D. Ryuji Takeda, Pharmacology
- Assistant Professor of same faculty,  
M.D. Yasunori Momose, Pharmacology
- Assistant Professor of same faculty,  
M.D. Hiromi Yamazaki, Pharmacology

**B. Paraguayan side (the Faculty of Chemistry and Pharmacy of Asuncion University)**

Term leader, Dr. Luis H. Berganza (the dean of the faculty)

Head official, Sr. Juan B. Paniagua

**Botany**

- i. Dr. Isabel Basualdo
- ii. Instructor Nelida Soria
- iii. Instructor Milta Ortiz
- iv. Instructor Fatima Mereles

**Phytochemistry**

- i. Dr. Esteban Ferro
- ii. Dr. Guillermo Schmeda
- iii. Instructor Lucia Franco

iv. Instructor Cristina Schmeda

Pharmacology

- i. Dr. Celica Onieva de Nazer
- ii. Dr. Lucia Areco
- iii. Dr. Derlis Ibarrola

## 7. Progress of study

The actual study activity was commenced in May 1985, when 3 Japanese experts of our university visited Paraguay. Among them, Dr. Suzuki (May-June) was dispatched to Botany Division, while Dr. Shimizu and Dr. Arisawa (May-July) were dispatched to Phytochemistry Division. They executed their tasks respectively such as checking, ascertaining, and arrangement of equipment and materials that were furnished to divisions respectively. Then, Dr. Yoshizaki visited for 10 months (July 1985-May 1986). He started the research on herbs on the spot, at first collected monthly the herbs sold on the market, made their dry specimens, next investigated their distribution in a state of nature, made the survey on the circumstances, ascertained whether the distribution was large or few, and carried out hearing survey on how to use the herbs. He collected 280 species of herbs during 10 months, most of which were made into dried specimens, and on a part of which the experiments of transplantation of roots, or of cuttage in case of trees, were conducted. It was very much regrettable that the anatomical research concerning the different species of same names or the variation in species was unable to be conducted because of the delay in the arrival of a microscope. However, we believe, it was very significant that Dra. Isabel, a c/p from the Botany Division to our university, received a training for 3 months (June-September 1986), and returned back to the country after the training and learning in our herbal garden on the classification and cultivation of plants, managing and installing of a herbal garden, the internal morphology of plant tissues, etc.

In phytochemistry, regarding species which were considered to be rather frequently used among the herbs on the market, the extracts with alcohol in Asuncion University were sent to Japan, with which biological tests were conducted under the respective expert in our university. Further, in regard with the effective extracts, the fractionation and isolation was proceeded to elucidate the chemical constituents. That is, Dr. Shimizu practised a screening test of extracts of various herbs on the inhibitory effect against Ardose-Reductase that is an enzyme relating to cataract, a complication of diabetes. He also received Dr. E. Ferro as a c/p of the Asuncion University. It was very much delightful that the c/p was trained on the technique of AR inhibitory activity test as well as fractionation of components for two months (June-August 1986), and showed good results, finding effective extracts after conducting the screening test on various herb extracts.

Dr. Arisawa was engaged in the study on the inhibitory activity against Angiotensin Converting Enzyme (called ACE) relating to hypertension, while Dra. Lucia Franco from the Asuncion University was trained as a c/p for 2 months (July-September 1985) and returned to her

country after having acquired the technique. During the time, she conducted the screening test on several extracts, and found effective extracts. Further, carrying out the screening test on KB cell method for the study of cellular toxicity, in the study of anti-cancer agents, she found a capacity extract.

Dr. Hayashi guided the screening test (April-September 1986) of various herb extracts on inhibitory activity against  $\beta$ -glucuronidase, enzyme relating to the impediment of liver function in our university and the Asuncion University, and at the same time, practised and guided on the inhibitory activity against Xanthin-Oxidase, enzyme relating to rheumatism. Then he found effective extracts, and practised the separation and extraction of the components, thus obtaining significant results.

As above, in chemical field, every one of experts has been earnestly conducting research and guidance in biological tests to find physiological activity. It is very much delightful that as for those results, 3 thesis were already contributed and reported in Japan Pharmaceutical Society (April 1986) and Japanese Society of Pharmacognosy (October 1986).

Now, pharmacological study has been added to this project, but this is the learning to be started from now in the Asuncion University, and there is actually no leader. Therefore, for the purpose to bring up a capable person who can be in a leading position, Dr. Ibarrola has been now receiving the training concerning basic pharmacology under Professor Suehiro Nakanishi, Department of Pharmacology, Faculty of Medicinal Science, of our University for the period of 1 year (April 1986-May 1987). He is earnest, and his good sense is recognizable.

As following, the actual accomplishments of technical guidance in study by our experts, the outline of the study plan in this project, the dispatching schedule of experts, etc. are described.

Plan of Execution of Cooperation in Study on Paraguayan Herbs

	1st Year (May 1985 - April 1986)	2nd Year (May 1986 - April 1987)	3rd Year (May 1987 - April 1988)
Identification and classification of herb	<p>I. Market survey</p> <ol style="list-style-type: none"> <li>(1) Monthly survey of items on the market</li> <li>(2) Preparation of dried specimens of herbs on the market</li> <li>(3) Hearing survey of medicinal effects of herbs on the market</li> <li>(4) Photographs of herbs on the market</li> </ol> <p>II. Survey of wild species</p> <ol style="list-style-type: none"> <li>(1) Survey on growing places of herbs on the market</li> <li>(2) Preparation of specimens of wild species</li> <li>(3) Collection of materials for extracts</li> <li>(4) Trial of transplantation into Asuncion University from wild nature</li> <li>(5) Photographs of wild species</li> </ol> <p>III. Classification and identification of herbs on the market and wild species</p>	<p>I. Market survey</p> <p>For the purpose of the supplementation of 1st year, emphasis is placed on the hearing survey mainly on the medicinal effect and how to use.</p> <p>II. Survey of wild species</p> <p>Same as in 1st year, with increased subject areas.</p> <p>III. Classification and identification</p> <ol style="list-style-type: none"> <li>(1) Botany division of Asuncion University takes lead to conduct the identification of species, including asking for appraisal to Japan and overseas (U.S.A., etc.)</li> <li>(2) Examine the difference and identity between those on the market and wild species as far as possible.</li> </ol>	<p>I. Market survey</p> <ol style="list-style-type: none"> <li>(1) Arrange materials in order</li> <li>(2) Supplementary survey</li> </ol> <p>II. Survey of wild species</p> <ol style="list-style-type: none"> <li>(1) Same as in 1st and 2nd year</li> <li>(2) Try to enable to put materials in order to some extent concerning the distribution of herbs through 1st to 3rd year. Comparison with species in neighboring countries.</li> <li>(3) Arrange materials in order.</li> </ol> <p>III. Classification and identification of herbs</p> <ol style="list-style-type: none"> <li>(1) Arrange materials in order.</li> <li>(2) Supplementation</li> </ol>
Chemical and pharmaceutical study of herbs	<ol style="list-style-type: none"> <li>I. Collection and purchase of herbs for extracts</li> <li>II. Preparation of extracts of various species of herbs</li> <li>III. Bioactivity test of extracts</li> <li>IV. Rough fractionation of extracts in which activity is noted.</li> </ol>	<ol style="list-style-type: none"> <li>I. Preparation of extracts of various species of herbs</li> <li>II. Bioactivity test of extracts</li> <li>III. Rough fractionation of extracts in which activity is noted</li> <li>IV. Separation and purification of active constituents</li> <li>V. Determination of chemical structure of active constituents</li> </ol>	<ol style="list-style-type: none"> <li>I. Preparation of extracts of herbs</li> <li>II. Bioactivity test of extracts, separated fraction, and components</li> <li>III. Rough fractionation of extracts in which activity is noted</li> <li>IV. Separation and purification of active constituents</li> <li>V. Determination of chemical structure of active constituents</li> <li>VI. Arrange results of chemical study in order</li> </ol>
Pharmacological study	<ol style="list-style-type: none"> <li>I. Equipment of laboratory</li> <li>II. Technical guidance on fundamental pharmacology</li> </ol>	<ol style="list-style-type: none"> <li>I. Pharmacological study on extracts and components of herbs</li> <li>II. Arrange results of study</li> </ol>	<ol style="list-style-type: none"> <li>I. Pharmacological study on extracts and components of herbs</li> <li>II. Arrange results of study</li> </ol>

	1st Year (May 1985 - April 1986)	2nd Year (May 1986 - April 1987)	3rd Year (May 1987 - April 1988)
Study on cultivation and breeding of herbs	<p><u>Study of cultivation</u></p> <p>I. Examination of propagation method (1) Cuttage testing methods are guided.</p>	<p>I. Examination of propagation method (1) Germination test (2) Cuttage test</p> <p>II. Examination of cultivation method (1) Problem of planting season (2) Problem of planting density</p>	<p>I. Propagation method is same as in 2nd year. Tests are conducted with different species of plant, and different propagation season,</p> <p>II. As for cultivation method, the difference in yield is examined by the season and density of planting, and the results are arranged in order.</p>
	<p><u>Study of breeding</u></p> <p>I. Detection of geographical variation by electrophoresis (1) Rudiments of electrophoresis are guided.</p>	<p>I. Detection of geographical variation by electrophoresis (1) Selection of species which can be checked with electrophoresis (2) Detection of variation</p>	<p>I. Detection of geographical variation (1) Detection of variation on 2 or 3 specific species (2) By the detection of variation, the lineage (when geographical variation is detected, each of it is maintained as a lineage respectively) will be clarified.</p>
Quality control of crude drugs			<p>When bioactive constituents is found, the breeding and cultivation of a herb containing the component are studied at various conditions (soil, fertilizer, water-supply, drainage, circumstances, etc.). After the proper time for planting, in which the yield of the component is high, is ascertained by quantitative analysis, the objective part of a herb is collected and dried (temperature condition, etc.). Further, storing and control should be properly examined, thus the quality of crude drug must be unified at a certain level. In order to examine various conditions, considerable years will be required.</p>

# Tentative Implementation Schedule

Item	Year	Phase 1 1985.5~1986.4	Phase 2 1986.5~1987.4	Phase 3 1987.5~1988.4
(1) Team Leader, Pharmacognosy				
Dr. Prof. Morita		7/1 10M		4/6 4/19 2/28 3/31
(2) Pharmaceutical Botany				
Dr. Aso. Prof. Yoshizaki		5/10 7/10 2M	0.5M 7/20 8/9	
(3) Phytochemistry				
Dr. Aso. Prof. Shimizu		9/10 11/9 6M	10/27 11/16 0.5M	
(4) Phytochemistry				
Dr. Arisawa		5/10 6/8 1M	1/27 2M 3/31	1.5M 7/24 9/8
(5) Phytochemistry				
Dr. Hayashi		9/10 11/9 4/10	1/27 2M 3/31	7/24 9/8 2/28 3/21
(6) Plant Breeding				
Dr. Suzuki		5/10 6/8 1M		
Mr. Yoshiaki Tatu				
Mr. Hiroharu Fujino				
Mr. Norihito Yamazaki				
(7) Pharmacology				
Dr. Prof. Nakanishi				
Dr. Momose				
Miss Yamazaki				
C/P from Paraguay				
(1) Botany, Dr. Isabel Basualdo		7/10 9/10 2M	5/10 3M 8/2	1M 11/10 12/10
Miss Nelida Soria		7/10 9/10 2M		0.5M 4/5 4/19
Miss Milta Ortiz		7/10 9/10		1M 11/30 12/30
(2) Phytochemistry				
Dr. Esteban Ferro		7/10 9/10 2M	6/22 8/22	
Miss Lucia Franko				
(3) Pharmacology				
Dr. Ibarrola			1.4M 5/10	2M 7/15
Dr. Lucia Areco				5/15 7/15



## Report on Guidance in Botany

Associate Professor Masao Yoshizaki, Technical Expert of  
Botany  
Faculty of Pharmaceutical Sciences  
Toyama Medical and Pharmaceutical University  
Period of technical cooperation: 10 months from July  
1985 to April 1986

This is to report the writer's activity as a short period expert in the first year of this project, at the Faculty of Chemistry, Asuncion University in the Republic of Paraguay, during the period from July 2, 1985 to April 24, 1986, and also to report the guidance furnished to c/p Isabel in the training in Japan, who was received in the 2nd year after the writer's return to Japan.

### I. Technical cooperation in study

The period of this dispatch succeeded to that of 3 technical experts who were dispatched at the beginning of this project. The writer succeeded the study cooperation of these 3 experts, and also cooperated with Hayashi, expert who was dispatched during September-November 1985. Further, the writer, together with Japanese leader, Professor Morita who visited Paraguay in April 1986, and Hayashi, expert who was to be dispatched for the 2nd year, deliberated with Paraguayan side concerning the substances in 1st year of cooperation in study, which were consented and taken over to Hayashi, expert.

At the beginning, the chiefs of divisions were absent, and it happened that chief's arrival at his post crossed c/p's departure for training in Japan. In addition, as c/p was at work almost half a day (after 2:00 p.m.), it was hard to complete a posture of study cooperation.

Pursuant to the guidance by JICA at the departure from Japan, by means of utilizing the furnished equipment and materials, attempting to make the correlation with the research which was collaboratively proceeded in Japan, the writer provided c/p of Asuncion University with fundamental assistance in the study on Paraguayan herbs, so that fundamentals of chemical and pharmaceutical researches could be build, thereby the improvement of scientific research and the development of cooperation in study would be attempted.

### II. Activity of technical cooperation in study

#### 1. Survey and raising of Paraguayan herbs

This work was carried out mainly in cooperation with c/p's of Botany Division.

On the basis of the survey at Asuncion 4th market, which was at first started in May by Suzuki, expert, specialized in botany, the survey and raising of Paraguayan herbs were proceeded in cooperation with c/p's, determining the substances of study as follows.

- (1) Survey through the year on Paraguayan herbs in Asuncion 4th market
- (2) Investigation of places of natural growth as well as places of cultivation of Paraguayan herbs.
- (3) Collection, preparation, and identification of materials for extracts in this project
- (4) Preliminary experiment for the introduction and breeding of plants

The survey of herbs on the market, succeeding to Expert Suzuki's survey in May, was started with monthly schedule, which was actually carried out in July, August, October, November, December, January, February, and March (twice), making 10 times in total. On herbs sold at Asuncion 4th market, the hearing was carried out on 4 items, i.e. the name in the market (common name), the part to be used, the effect, and how to use it. Herbs were purchased and brought back to a laboratory, dried specimens of which were made for all species. Meanwhile, dried leaf specimens were made if practicable, thus crude drugs and dried leaf specimens were prepared, by which the accumulation of study materials in the university was consecutively intended. On the other hand, photographs were taken on some of herbs at the time of purchase, and slide-specimens were also prepared.

Since these can become fundamental materials for the study of herbs, the guidance was coconducted to c/p concerning the preparation of crude drugs, dried leaf- and slide-specimens at every chance of such practice. As the results of the survey of Paraguayan herbs on the market in the period, about 280 species were obtained (Refer to Table 1. a, b, and c.). These specimens were transferred in the new laboratory of botany which was completed in the beginning of April 1986, where they have been placed in good order and well preserved.

Having planned to go out to several places in the country, together with c/p in Botany Division, for the purpose of the study on the natural growth as well as cultivation of herbs which appeared in Asuncion market, and of the collection of study materials in phytochemistry, we collected species in those places shown on Fig. 1 and Table 2, on some of which dried leaf specimens as well as slides were prepared, and the leaf specimens have been preserved in the specimen room of Botany Division.

Simple facilities (for example, a drying rack) required for the treatment of herbs were devised on the spot and installed in the old room of Botany Division, and each method of preparation for specimens and so on was guided on the collected study materials for extracts. Further, in regard with herbs for extracts study, the inventory was made, and the records of delivery and receiving between divisions of Botany and Phytochemistry were kept by c/p's. And a part of herbs for study was made to be kept in Botany Division. Those species of herbs collected by Botany Division for extract study are shown in Table 3.

In this project, as there was an idea to establish a botanical garden in the university, taking it into consideration, I guided preliminary experiments concerning the introduction and breeding of plants, though general matters on a botanical garden will be referred afterwards. Concerning the introduction of plants, when we visited DPTO. ITAPUA and DPTO. ALTO PARNA for collection, we learned by observing the state of affairs in preceding places and took the procedure of introduction. Concerning breeding, effort was placed on succeeding and developing of a cuttage experiment in a wooden boxes, one of these which were developed and guided by Suzuki, expert, the pioneer. At first the increase in the number of wooden boxes was intended, and extending the experiments, 4 seeding fields of 1.2 x 5 m were consecutively made as experimental field, in the adjacent area to the previous site of Botany Division, and in addition, water tanks, pots, etc. were also set. Making use of these facilities, germination experiment, cuttage experiment, transplantation and management of wild plants, etc. were practised and corresponding c/p's to each item were guided.

In cuttage experiment, a part of herbs obtained in the market and the collected species from natural growing places were used as material. The above is partly shown in Table 4. a and b. However, to our regret, because the location of newly installed laboratory building was changed to be more inside than initially contemplated, as the result of the obliged removal of seedling field that were carried out in midsummer (December), many plants withered.

As one of scientific studies of breeding cultivation, Suzuki, expert guided the electrophoresis of protein. C/p Nelida and Mirta, who were trained in Japan and returned to Paraguay, collected, in various places, seeds of *Cassia* sp. yielded in Paraguay. Though starting the experiment in May, they could not get results because of frequent power failure, the removal of laboratory, etc. The pattern analysis of protein electrophoresis of seed protein was conducted since May in new laboratory of botany, and we have heard a part of the substance of the study was afterwards reported in seminar in the university. I only guided the collection and handling of materials for this study.

Besides above, I hereby refer to the matters which have concern with laboratory facility of botany and c/p, i.e. purchased or delivered equipment and materials, newly-built laboratory of botany, the installation of a botanical garden, etc.

(a) Purchased or delivered equipment and materials

Since at the time of commencement of the study in this project, there were hardly any equipment or materials, so it was very regrettable that the arrival of equipment and materials was delayed. Above all, as a microscope only arrived one week before my departure for Japan, the guidance on it was unable to be done. However, on the rest, such as the preparation of dried leaf specimens, and making of a slide of a herb by the use of a camera, I guided directly.

(b) Advice on equipping the newly-built laboratory of botany (See Fig. 2)

The construction work was started towards the end of November, and the whole aspect was viewed in February next year. As it became clear that the internal facilities in laboratory, photo-studio, herbarium, warehouse, etc. were not properly made, I

explained the peculiarity of each facility and advised. Meanwhile, I consulted with JICA Asuncion Branch on such respects as the university was unable to manage, and a part of unsatisfactory facilities was mended with a part of the budget for local business expense of JICA. Further, an examining system was set up, preparing for the study cooperation in 2nd year and thereafter.

(c) Guidance on the idea of a botanical garden (Refer to Fig. 3.)

The survey of contemplated land of about 2 ha. was carried out in November. The survey map was shown by the dean of a university faculty through the chief of Botany Division in March. Concerning the substance of equipping of a botanical garden, I generally discussed on the contents and facilities with the chief of the division. Regardless of whatever the adopted plan may be, in view of the present status of locale, I recommended to build an enclosure fence of the garden to prevent the damage on plants due to cattle's intrusion, and advised to arrange pipes and provide faucets, to create ponds. It was a matter of congratulation that an enclosure was completed during my stay.

(d) Identification of original plants of Paraguayan herbs

Those species which were able to be verified with materials (dried leaf specimens) of Botany Division of Faculty of Chemistry and Pharmacy, Asuncion University, and those detectable from local books, were furnished with botanical names. After my return to Japan, investigation was carried out in botanical magazines, botanical cyclopedias, etc. to ascertain the botanical names which were confirmed by Index Kewensis, and further, sometimes the appraisal was asked for the expert of taxonomy. It was planned that among herbs on the market, those which were unable to be appraised, i.e. a part of a seed, roots, rhizomata, etc. would be raised at locale to obtain such material enabling appraisal.

Besides above, together with c/p's of Botany Division, I purchased and utilized necessary articles for the survey of herbs in locale. However, to my regret, regardless of my desire to proceed the improvement of study as well as the guidance of study in a new laboratory, neither new nor old laboratory was utilized for study in March, because of the delay of construction, the move of the laboratory towards the end of my stay period, receiving of purchased or delivered equipment and materials, and so forth.

2. Cooperation in chemical research of Paraguayan herbs

The cooperation during my stay was executed in promotion and development of study mainly concerning the preparation of herb extracts, on basis of the technical guidance on the spot by Shimizu and Arisawa, experts specialized in chemistry who were dispatched at first. The substances were shown in Table 5. a and b.

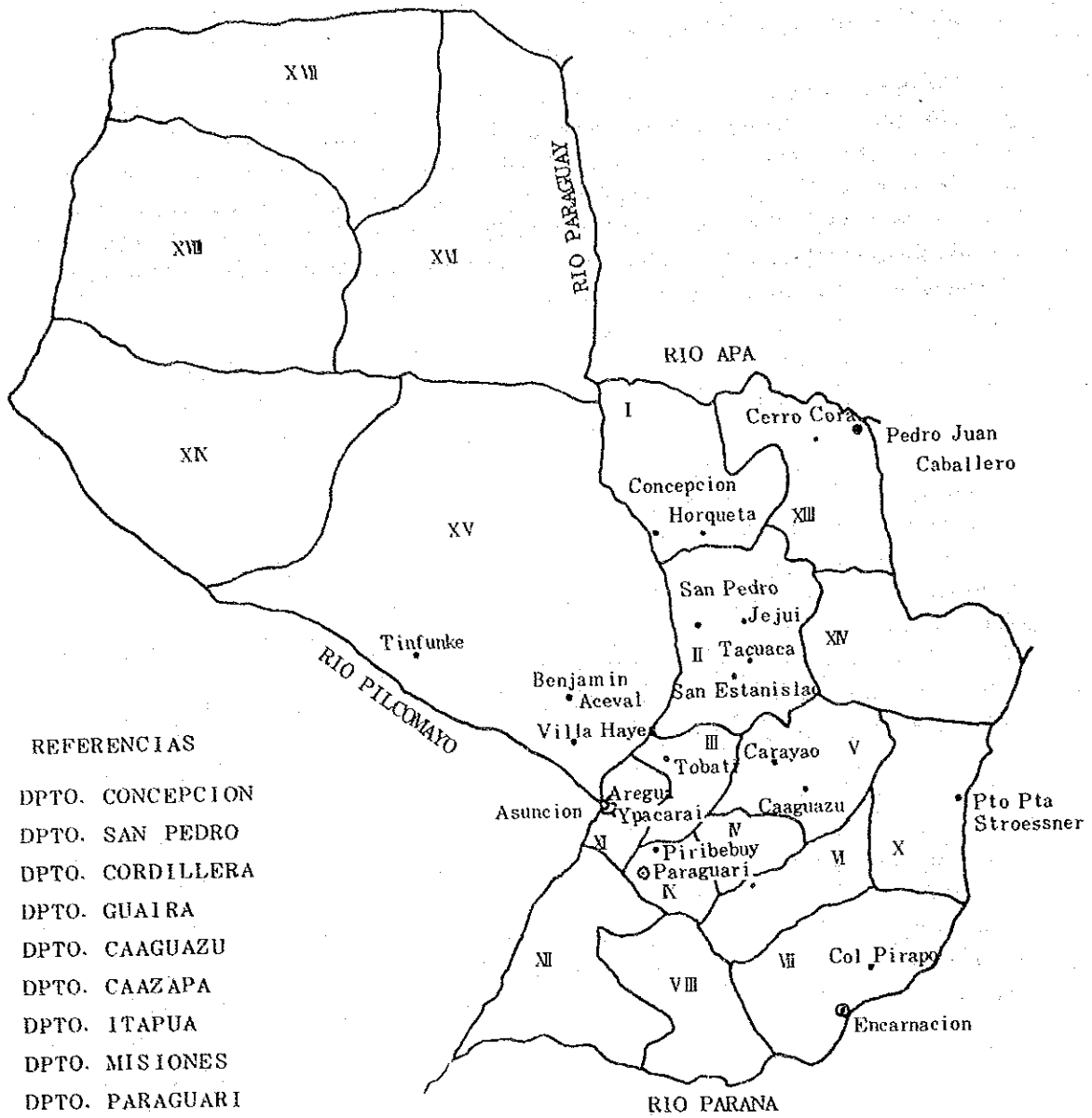
I discussed and dealt with the problems which occurred in phytochemistry field. They were the problems concerning water quality and water pressure, replenishment of solvent, replenishment of expendables in accordance with the operation of machines, etc.

My guidance was concerned with study through how to handle the materials collected by Botany Division, and advice as well as guidance were conducted on Sara moroti concerning fractionation of extracts, on basis of the matters that I had heard during expert, Hayashi's stay in Paraguay (2 months from September to November).

3. Matters relating to the execution of the project

Though the cooperation in study was started under the thesis of chemical and pharmaceutical study on Paraguayan herbs, there were several points, that could not be understood in same standpoint, in the details of the guidances by experts. Paying attention to the problems between two countries as well as the relations between specialized sections, I made a rule to open the entire meeting once a week, which was held 24 times in total during the term of my stay, thus the smooth execution of the project was intended.

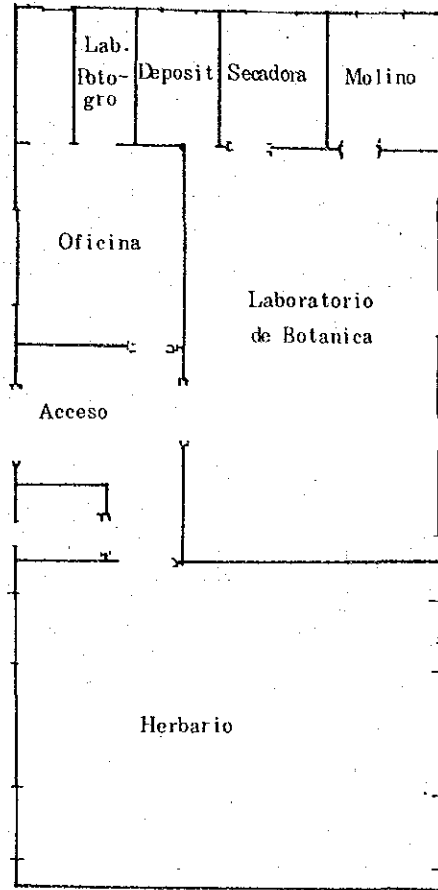
Fig. 1 Principales Puntos en Búsquedas de Plantas Medicinales



REFERENCIAS

- I DPTO. CONCEPCION
- II DPTO. SAN PEDRO
- III DPTO. CORDILLERA
- IV DPTO. GUAIRA
- V DPTO. CAAGUAZU
- VI DPTO. CAAZAPA
- VII DPTO. ITAPUA
- VIII DPTO. MISIONES
- K DPTO. PARAGUARI
- X DPTO. ALTO PARANA
- M DPTO. CENTRAL
- XI DPTO. NEEMBUCU
- XIII DPTO. AMAMBAY
- XV DPTO. CANENDIYU
- XVI DPTO. PRESIDENTE HAYES
- XII DPTO. ALTO PARAGUAY
- XI DPTO. CHACO
- XIII DPTO. NUEVA ASUNCION
- XX DPTO. BOQUERON

Fig. 2 Plan de Seccion Botanica



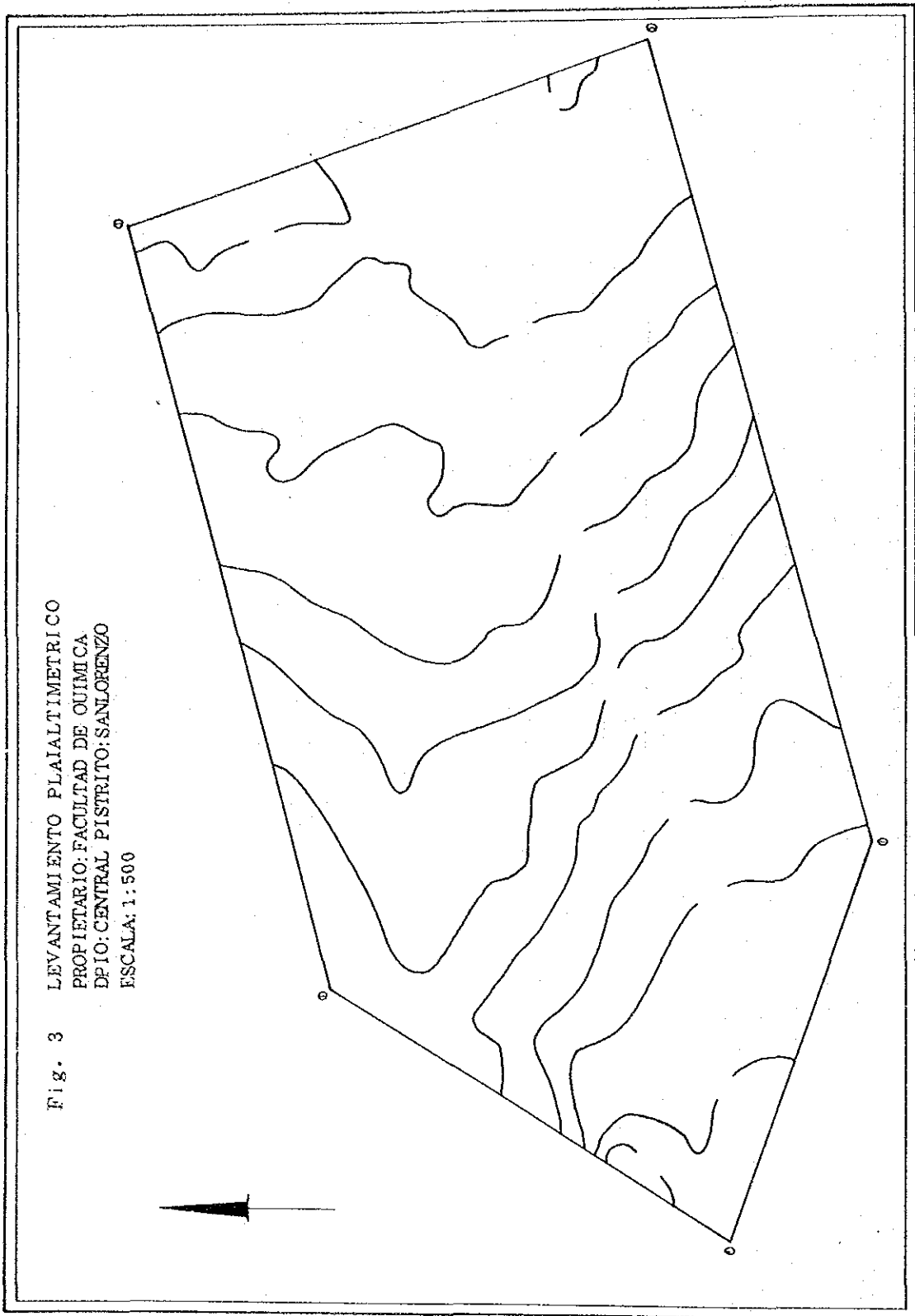




Table 1 - a PLANTAS MEDICINALES UTILIZADAS EN EL PARAGUAY - MERCAD Municipal No. 4 de Asunción

N.º	NOMBRE VULGAR	PARTE UTILIZADA	F E C H A												USOS	EMPLERO		
			21/V	11/V	28/V	1/X	28/X	27/X	30/I	13/I	6/II	31/III						
010001	Azeste poty	Parte aérea			81													Infusion, Decoccion
010002	Agrial	Parte aérea	69	40	49	3	55		17				49					Maceration en agua fria
010003	Aguacate	Hoja			126		49											Maceration en agua fria. Decoc.
010004	Agupé puru-a	Hoja	6	55	25	77	68	11					25					Infusion
010005	Ajenjo	Parte aérea				54	13	26	50				68					Infusion, Decoccion
010006	Albahaca blanca	Semilla																friccion
010007	Albahaca blanca	Sumidad florida			51	88	25	56	37	6								Infusion
010008	Albahaca morada	Hoja			107								32	18				Infusion
010009	Alcanfor del campo	Parte aérea	53				38	12	48									Infusion, Decoccion
010010	Alfalfa	Parte aérea				96							42					Infusion
010011	Alhucema	Parte aérea			92			27	4				31					Infusion, Decoccion
010012	Almique	Fruto				85	137						55					Maceration en agua fria
010013	Altamisa	Parte aérea			96/100		7		19									Infusion, Decoccion
010014	Altamisa-i	Parte aérea				52												Infusion, Decoccion
010015	Ambay	Hoja	48	32	2	71		20	36				46					Decoccion
010016	Anguyá ruguay	Planta entera			120	83	8	69					51					Maceration en agua fria
010017	Anís	Fruto				150	135						11					Decoccion
010018	Apio Paraguay	Planta entera		43	99	13	36											Maceration en agua fria
010019	Arachichu	Fruto			112	26		23										Frotar sobre parte afectada
010020	Azafran	Flor				41	117	112										Infusion, Decoccion
010021	Aromita	Flor					112	74					35					Infusion
010022	Amapola	Flor					119	80					31					Decoccion
010023	Andai	Semilla					124	103					57					Decoccion

N <sup>o</sup>	NOMBRE VULGAR PARTE UTILIZADA	F E C H A												USOS	EMPLEO	
		21/V	11/VI	28/VII	1/X	28/X	27/XI	30/XI	1/II	13/II	6/III	31/III				
010024	Algarrobo						84								histeralgia	Infusion, Decoccion
010025	Ambay say yu														antiasmatico	Infusion, Decoccion
010026	Albahaca del campo			17											antiparasitario	Infusion, Decoccion
010027	Azafran												38			

B -

020101	Batatilla	12	5	36	110	89	101					89			diuretico, refrescante	Maceracion en agua fria
020102	Barba de maiz	55			42	71	89	75	28						diuretico, antipiretico, refrescante, enf. renales	Decoccion
020103	Boldo				99	132						2			digestivo	Infusion, Decoccion
020104	Borracha			128	129							3			antitusigeno	Infusion, Decoccion
020105	Burruto		50	10	144	11	39	38				15			para las intoxicaciones, digestivo	Infusion, Decoccion
020106	Burro caa												13		baja el colesterol	Maceracion en agua fria, Infusion

C -

030201	Caa hee				101										antidiabetico	Infusion, Decoccion
030202	Caa piky		44	41	39										refrescante	Maceracion en agua fria
030203	Caare	65			65		5					37			antiparasitario	Infusion, Decoccion, Maceracion en leche
030204	Caare				149	133	85					20			antiparasitario	Infusion
030205	Caarurupé			95/129	31	14	91	61				83			diuretico, refrescante	Maceracion en agua fria
030206	Caatai				63										antihemorroides	Infusion, Decoccion
030207	Caaro tyrey			116	94										hepatitis, enf. hepaticas	Infusion, Decoccion
030208	Cabello de angel				44	66	21	55	29			67			enf. hepaticas, nefritis, enf. renales, refrescante	Infusion
030209	Calabacita	64					113		50			47			abortivo, antidiabetico	Infusion, Decoccion
030210	Calaguata	41	61	13	40	27	8	30				56			abortivo, emenagogo, purificar la sangre, antiinfeccioso	Infusion, Decoccion
030211	Cambara		68		112	141	19					23			antitusigeno	Infusion, Decoccion
030212	Camambu			79			58								enf. hepaticas, digestivo	Infusion

N <sup>o</sup> C	NOMBRE VULGAR PARTE UTILIZADA	F E C H A												USOS	EMPLEO	
		21/V	11/VII	28/VIII	1/X	28/I	27/II	30/III	13/IV	6/V	31/VI					
030213	Cana brava Rizoma	29	141	47	96/97	124	82					90			abortivo, antisifítico, enf. renales, enf. del corazón	Infusion, Decoccion
030214	Canchalagus Planta entera		83												cefaleas	Infusion
030215	Canchalagua-i Parte aérea			53	67										abortivo, emenagogo	Infusion
030216	Canela Hoja		114				30					10			antiespasmodico	Infusion, Decoccion
030217	Cangorosa Hoja, corteza de raíz	45	15	47	22	63	46					74			abortivo, emenagogo, combate la ulcera, anticancerigen	Infusion, Decoccion
030218	Capii cati Raíz	10	142	70	105	15						94			diuretico, refrescoante	Maceracion en agua fria
030219	Capi-una Parte aérea	68	104			45						81			diuretico, enf. hepaticas	Infusion
030220	Caraguata-i Planta entera		93												refrescoante	Infusion
030221	Caraguata Fruto			79											antiinflamatorio	Infusion, Decoccion
030222	Caraguata Raíz		63	18	45	91	71					96			abortivo, emenagogo, antisifítico, diuretico	Infusion, Decoccion
030223	Caroba (Jucaranda) Corteza		147		88	107	74								para adelgazar, para quemaduras, antimicofico	Decoccion
030224	Caraguata rusa Hoja		140	35	15		43					19			diuretico, refrescoante	Maceracion en agua fria, Decoccion
030225	Carde santo Planta entera		26	45	12										diuretico, emenagogo	Maceracion en agua fria
030226	Carde santo Semilla			68			83								antiasmatico, para combatir la borrachera	Infusion, Decoccion
030227	Cstusba Hoja			134	126	99		15							afrodisiaco	Infusion, Decoccion
030228	Caygua-i Semilla			103			96								emetico, para combatir la borrachera	Infusion, Decoccion
030229	Cebada paraguay Semilla			140	114							12			antipiretico	Maceracion en agua fria
030230	Cedron capii Hoja	24	121	21	44							70			enf. del corazon, digestivo, sedante	Infusion, Decoccion
030231	Cedron Paraguay Parte aérea	14	52	105	154	48	47	16				13			enf. del corazon, sedante	Infusion, Decoccion
030232	Celibo Corteza		134	142	87	77	86	87							faringitis, para combatir la jaqueca, antihemorroidal, para lavar herida	Infusion, Decoccion (externa)
030233	Cepa caballo Parte aérea	2	13	16	141	52	16					11			antitusigeno, refrescoante, diuretico	Infusion, Decoccion
030234	Cerraja Parte aéreas				66										para combatir la ulcera	Infusion
030235	Charrúa csa Raíz	32	34	22	147	142	102					93			diuretico, digestivo, antidiarreico	Infusion, Decoccion
030236	Chicoria Raíz	33	7/25	14	6	143						42			antitusigeno, laxante, purgante	Infusion
030237	Chirca melosa Parte aérea	66				61		59							antipuriginoso, antidiabetico, baja la colesterol, afecciones pulmonares	Infusion, Decoccion
030238	Cocú Hoja	7	1	39	37/78	43	13	28				72			ictericia, refrescoante, enf. hepaticas	Maceracion en agua fria

N <sup>o</sup> C -	NOMBRE VULGAR	PARTE UTILIZADA	F E C H A												USOS	MEPLEO
			21/V	11/VI	28/VII	1/X	28/X	27/XI	30/II	13/III	6/IV	31/III				
030239	Cola de caballo	Planta entera	5	31	5	136	31	6	12	48	76				diurético, enf. renales	Infusion, Decoccion
030240	Curupaý curú	Corteza				102									antimicótico	Decoccion
030241	Culantrillo	Planta entera				105	70								enf. hepáticas, enf. renales	Infusion
030242	Culantrillo arroyo	Planta entera			90	77				49	20	16			diurético, antifebril, abortivo, enf. del corazón	Infusion
030243	Cumanda yvira-í	Parte aérea			89	126		35							antitusígeno	Infusion
030344	Curatú	Semilla				90	130	72							hipertensor, flatulencias	Infusion, Decoccion
030245	Curugua	Fruto			130			122							enf. hepáticas	Ingestion del fruto
030246	Curuguá	Semilla			148	122				33					enf. hepáticas, enf. renales	Infusion, Decoccion
030247	Curupaý-mí	Parte aérea	70	69		92				72	32				antirreumático	Infusion, Decoccion
030248	Curupica-y	Corteza				76									enf. hepáticas	Infusion, Decoccion
030249	Cebadilla	Parte aérea						128							abortivo	Infusion, Decoccion
030250	Cumanda piré	Vaina						68	62						antidiabético, antifebril	Infusion, Decoccion
030251	Cai arroz	Parte aérea						50							combate el ácido urico y la gota	Infusion, Decoccion
030252	Capí pyá	Parte aérea						65	68		18				abortivo, antidiabético, adelgazante	Infusion, Decoccion
030253	Capii-pe poi	Rizoma						67	37		86				diurético, antipirético, estomatitis	Infusion, Decoccion
030254	Caña de azúcar	Flor						127							combate la coqueluche	Infusion, Decoccion
030255	Cangorosa	Corteza de raíz							66						abortivo	Infusion, Decoccion
030256	Caavoveti	Flor								58					combate la tos convulsa	Infusion, Decoccion
030257	Culantrillo caay	Planta entera								71					Remedio caliente	Infusion, Decoccion
030258	Cai cuchara	Pericarpio								78					contra la bronquitis	Infusion, Decoccion
030259	Cedrillo	Corteza								85					antiinflamatorio	Infusion, Decoccion
030260	Cavara caa	Parte aérea							60						antidiabético	Infusion, Decoccion
030261	Cardo santo	Raíz									53				abortivo	Infusion, Decoccion
030262	Capii pororo	Planta entera										15			para parturientas	Infusion, Decoccion ebanos caliente (externo)

Nº	NOMBRE VULGAR PARTE UTILIZADA	F E C H A												USOS	EMPLEO		
		21/V	11/W	28/W	1/X	28/X	27/XI	30/I	13/II	6/III	31/III	Tranquilizante					
090601	Incienso. Corteza										73						Infusion, Decoccion shumerio

K-		F E C H A												USOS	EMPLEO		
Nº	NOMBRE VULGAR PARTE UTILIZADA	21/V	11/W	28/W	1/X	28/X	27/XI	30/I	13/II	6/III	31/III	Tranquilizante					
111001																	
111002	Kino-kino Parte aérea	67						30					12				antiinflamatorio Infusion, Decoccion Maceracion en agua fria

L-		F E C H A												USOS	EMPLEO		
Nº	NOMBRE VULGAR PARTE UTILIZADA	21/V	11/W	28/W	1/X	28/X	27/XI	30/I	13/II	6/III	31/III	Tranquilizante					
121101	Laurel de España Hoja				125	2	53										antiespasmolico digestivo Infusion, Decoccion
121102	Llanten de agua Planta entera				62	62											combate la hepatitis, para adelgazar Infusion, Decoccion
121103	Llanten de tierra Planta entera	15	24	12	8	4	36	3			43						remedio para todo, antiinflamatorio, Infusion, Decoccion leucorrea, vaginitis
121104	Lapacho colorado Corteza					136	70		15/46								antirreumatico, digestivo, anticanceroso Decoccion
121105	Laurel hú Hoja					22											emenagogo Infusion, Decoccion
121106	Lengua de vaca Planta entera					18											combate el lumbago Infusion, Decoccion
121107	Lima purúa Epicarpio, jugo					139											combate la hepatitis Infusion, Decoccion, Jugo
121108	Lino Semilla					131	87	1									para la deshidratacion, refrescante Infusion, Decoccion Maceracion en agua fria

M-		F E C H A												USOS	EMPLEO		
Nº	NOMBRE VULGAR PARTE UTILIZADA	21/V	11/W	28/W	1/X	28/X	27/XI	30/I	13/II	6/III	31/III	Tranquilizante					
131201	Malva blanca Sumidad florida	46	38	31	118	25	34	52			10						antitusigeno, expectorante Infusion, Decoccion
131202	Malva de castilla Parte aérea				30		75										en las taquicardias, para combatir la Infusion frigididad
131203	Malva de color Parte aérea				95												enf. del corazon, para las dolores de Infusion cabeza
131204	Malva rapó pire Corteza de la raíz	28	27	32	84		90	36		92							abortivo, antiinflamatorio, enf. venereas, Decoccion combate la vaginitis
131205	Mango Flor				67												antitusigeno, para combatir la bronquitis Infusion, Decoccion
131206	Mansanilla Flor				135	111			4								antiespasmolico, remedio caliente Infusion, Decoccion
131207	Marcela Parte aérea				128		55	95	65	54							antiespasmolico, para eliminar el empacho, Infusion, Decoccion digestivo, antidiarreico
131208	Mastuerzo Parte aérea		75	1	49	24	41	51									combate la hepatitis, combate el lumbago, Infusion enf. renales
131209	Mbaracaya nandi Planta entera		8	29	64/143			2								1	diuretico, enf. hepaticas, hemostatico Decoccion

N <sup>o</sup>	NOMBRE VULGAR	PARTE UTILIZADA	F E C Y A												USOS	EMPLEO
			21/V	11/M	28/M	1/X	28/X	27/M	30/I	13/I	6/II	31/III				
D -																
040301	Doctorcito	Hoja		119		72	24				48				antiespasmodico, digestivo	Infusion, Decoccion
040302	Doradilla	Parte aérea	43	73	20	153		47	47			14			abortivo, enf. hepaticas, dolores menstruales	Infusion, Decoccion
040303	Doradilla crespá	Parte aérea		91					75	82					abortivo, emenagogo, remedio caliente	Infusion
040304	Doradilla negra	Planta entera									63				abortivo	Infusion, Decoccion

E -

050401	Eneíde	Fruto				152	128	120		10					antiespasmodico, digestivo	Infusion, Decoccion
050402	Espartillo-i	Parte aérea				137		57	57		30				abortivo, enf. venereas	Infusion, Decoccion
050403	Eucalipto	Hoja		48	37	4	81-83	61	93-95	75					antitusígeno, para combatir la bronquitis	Infusion, Decoccion Inhalacion
050404	Espartillo guazú	Parte aérea					16	121	96	26	7				abortivo, combat eí tifus, hemostático	Infusion, Decoccion
050405	Espinillo	Corteza								89					sin datos	Infusion, Decoccion

G -

070601	Girasol	Semilla				98	121	86		54					antidiabético, enf. cerebrales, dolores de parto	Infusion, Decoccion
070602	Granada	Epicarpio				33				14					antidisentérico, antidiarreico	Infusion, Decoccion
070603	Guavira	Fruto				100									para purificar la sangre	Infusion, Decoccion
070604	Guayaba	Parte aérea		124											faringitis	Infusion, Decoccion Maceracion en agua fria
070605	Guayacán	Corteza	37			59	76	30	40						antiespasmodico, infecciones urinarias, antidisentérico, antidiarreico	Infusion, Decoccion
070606	Guayacán	Aserrín de corteza					127	88							antidisentérico, antidiarreico	Infusion, Decoccion
070607	Guavira-mí	Fruto								23					digestivo	Maceracion en caña

H -

080701	Hinojo	Raíz	25	3	27	5	57	15	5						antiespasmodico, para calmar la sed	Maceracion en agua fria
080702	Higo	Hoja						126							antiasmático	Infusion, Decoccion
080703	Hinojo	Fruto								9					digestivo	Infusion, Decoccion

Nº	NOMBRE VULGAR	PARTE UTILIZADA	F E C H A												USOS	EMPLEO		
			21/V	11/W	23/W	1/X	28/X	27/M	30/I	13/II	6/III	31/III						
M -																		
131210	Mbaracayá mambí(2)	Planta entera		9													eménago	Infusion, Decoccion
131211	Mbaracayá-puapé	Raíz		46													diurético, antiirreumático, abortivo, enf. renales	Maceracion en agua fria
131212	Mboocaya-i rapó	Raíz	11	33	38	119	76										diurético, hipotensor	Infusion, Decoccion
131213	Mbocaya	Plántula				133		10	44								antipaludico, antidiabetico, enf. renales	Maceracion en agua fria
131214	Mboy caa	Parte aérea			115												enf. del corazon, sedante	Decoccion
131215	Mburucuya	Flor			94												enf. del corazon, sedante	Infusion, Decoccion
131216	Mbuy say-yú	Planta entera		71	101	82	95										combate la intoxicacion, provoca el vomito, enf. renales	Infusion, Decoccion
131217	Mburucuya-i	Raíz				104											abortivo, sedante	Infusion, Decoccion
131218	Mecho acá	Raíz	57		133		114	77									contraceptivo, enf. del corazon, antisifilitico, laxante	Infusion, Decoccion
131219	Menta	Parte aérea				10	35	56									antiespasmodico, enf. del corazon, digestivo	Maceracion en agua fria
131220	Menta-i	Hoja	16	22		109		2									traquilizante, digestivo, sedante	Maceracion en agua fria
131221	Molle	Planta entera			109				35								gingivitis	Decoccion
131222	Molle-i	Planta entera		62		17	54										faringitis, amigdalitis, antisifilitico	Infusion, Decoccion
131223	Mora	Hoja			86												baja el colesterol	Infusion, Decoccion
131224	Mamon macho	Flor	44			1	66	59									antitusigeno, expectorante	Infusion, Decoccion como jarabe
131225	Melon	Semilla				122											antipiretico	Infusion, Decoccion
131226	Mill hombre	Tallo	27	11	34	18	100	92	64	82	104						abortivo, para combatir el lumbago, antiirreumático, afrodisiaco	Maceracion en agua fria
131227	Mboocaya	Flor					125										antimoniliasis	Infusion, Decoccion
131228	Madreselva	Flor					71										combate la taquicardia	Infusion, Decoccion
131229	Mandarina	Hoja				21											antiespasmodico	Infusion, Decoccion
131230	Mostaza	Semilla								56							combate la bronquitis	como cataplasma
131231	Macagua caa	Parte aérea								76							afecciones del ovario	Infusion, Decoccion
131232	Margarita pyta	Planta entera						22									hemostatico	Decoccion
131233	Mbaracayá mambí (3)	Planta entera															2	Maceracion en agua fria (gargarismo)
131234	Mandiyurá	Raíz															17	Infusion, Decoccion

N°	NOMBRE VULGAR	PARTE UTILIZADA	F E C H A												USOS	EMPLEO
			21/V	11/V	28/V	1/X	28/X	27/XI	30/I	13/II	5/III	31/III				
141301	Naranja agria	Hoja			111										sedante	Maceracion en agua fria
141302	Naranja dulce	Epicarpio				102									sin datos	Infusion, Decoccion
141351	Nandypá	Hoja		60			51		40				66		baja d colesterol, antidiabetico, adelgazante	Infusion, Decoccion
141352	Nangapirý	Hoja	9	41	11	1	34	59	53				2/34/65		baja el colesterol, hipotensor, adelgazante, antidiabetico	Maceracion en agua fria
141353	Nuatí pyá	Raíz	21	4	135		86		72				97		diuretico, enf. renales	Infusion, Decoccion
141354	Nuatí pe	Planta entera							18				8		combate el empacho de los niño, digestivo	Maceracion en agua fria
141355	Nandypá	Corteza							79						adelgazante	Infusion, Decoccion

O -

151401	Orégano	Planta entera			87	9	64								digestivo	Infusion, Decoccion
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P -

161501	Pacholí	Parte aérea				34									sedante	Infusion
161502	Palmita	Hoja		54	4		30		18						antiespasmodico, antiparasitario	Infusion, Decoccion
161503	Paraíso	Raíz		53											abortivo	Infusion, Decoccion
161504	Para-pará	Planta entera	59	42	28		45	22	39				3		para eliminar el calculo renal	Infusion Maceracion en agua fria
161505	Paratodo piré	Corteza del tallo	35	45			138	107					74		afecciones estomacales, en las timaduras y golpes, adelgazante.	Infusion, Decoccion
161506	Pata de buey	Hoja	50	70	46		20	80	32				39		enf. renales	Infusion, Decoccion
161507	Pata de buey-í	Hoja			110		36	79							enf. hepaticas, enf. renales	Infusion, Decoccion
161508	Penacho	Flor					61		21				52		enf. del corazón, hemostatico	Infusion, Decoccion
161509	Penicilina	Hoja	42				38	54					27		faringitis, dermatitis, para desinfeccion de heridas	Infusion, Decoccion (externo)
161510	Perdudilla blanca	Parte aérea	3	2	3		127	39	4	34			14		diuretico, refrescante	Maceracion en agua fria
161511	Perdudilla negra	Planta entera					57		28				88		combate la hepatitis, antidiarreico	Infusion, Decoccion
161512	Perejil	Raíz	13		123		35	129							abortivo	Infusion, Decoccion
161513	Pindo	Raíz	34	20			116	98	104	63					abortivo, diuretico	Maceracion en agua fria
161514	Pipí	Planta entera		28			20		41						antirreumatico, antisifilico	Maceracion en agua fria, Infusion



N°	NOMBRE VULGAR PARTE UTILIZADA	F E C H A												USOS	EMPLEO
		21/V	28/VI	1/X	28/XI	27/XII	30/I	13/II	6/III	31/III					
161515	Poleo guazú Parte aérea		85											digestivo	Infusion, Decoccion
161516	Poleo-i Hoja	19	84/108	29	19	1	8	6/36						abortivo, antiespasmodico, digestivo, remedio caliente	Infusion, Decoccion
161517	Pyno guazú Raíz		58	16	103	111	94	91						antiinflamatorio, antidiabetico	Infusion, Decoccion
161518	Pyno-i Parte aérea		98	48										para la circulacion de la sang, para purificar la sangre	Infusion, Decoccion
161519	Palo santo Tallo				113	100	17							baja el colesterol, antiinflamatorio	Maceracion en alcohol, Decoccion
161520	Poleo de Castilla Parte aérea					6								en los dolores menstruales	Infusion, Decoccion
161521	Poleo de menta Parte aérea				78									antiparasitario	Infusion, Decoccion
161522	Perthicaría Planta entera				73									antidiarreico	Infusion
161523	Pacová hú Rizoma						34							combate la hepatitis	Maceracion en agua fria, Decoccion
161524	Pety hú Hoja						84							antirreumatico	Maceracion en alcohol
161525	Purguilla Planta entera							79						en los empachos, purgante	Infusion, Decoccion
161526	Pirí Raíz							107						antidiabetico	Infusion, Decoccion

Q -

171601	Quebracho blanco Corteza		146	88	106		18							antiasmatico, antipiretico, digestivo, combate la bronquitis	Infusion, Decoccion
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R -

181701	Rábano Parte aérea		125	55		32			5					en los empachos, laxante	Infusion, Decoccion
181702	Retama Parte aérea		77				83							enf. renales	Infusion, Decoccion
181703	Romero Parte aérea		17	35	32	48	64	35						hipertensor, baja el colesterol, enf. del corazon	Infusion, Decoccion
181704	Rosa china Flor			80	120	82	7							para las hemorragias del ojo	Maceracion en agua fria
181705	Rosa mosqueta Flor		144	58	116		5							laxante	Infusion
181706	Ruda Parte aérea		19	23	42	49	11	41						antifebril, antirreumatico, purifica la sangre, antigrupal	Infusion, Decoccion
181707	Ruibarbo Raíz		31	138	92	117	92							abortivo, emenagogo, para la circulacion de la sang, flatulencias	Decoccion
181708	Rosa pta ite Flor					118								colirio	Maceracion en agua fria
181709	Rosa del campo Flor						45							enf. del corazon	Infusion, Decoccion

Nº	NOMBRE VULGAR PARTE UTILIZADA	F E C H A												USOS	EMPLEO	
		21/V	11/M	28/M	1/X	28/X	27/X	30/I	13/II	6/III	31/III					
181710	Ruda macho Parte aérea							10					44		abortivo, antirreumático	Infusion, Decoccion Maceracion en alcohol
181711	Raído sombrero Sumidad florida												29		antifebrilítico	Infusion, Decoccion

S -

191801	Salvia	Sumidad florida	36	30		26	25	13					45		antiespasmódico, combate los dolores menstruales	Infusion, Decoccion
191802	Salvia né	Sumidad florida			114										combate los dolores menstruales	Infusion, Decoccion
191803	Sandía	Semilla				97	129								antifebril, antigripal	Decoccion
191804	Santa Lucía morotí	Raíz	1	6	48	146	84	106	14				84		diurético, refrescante	Infusion, Maceracion en agua fría
191805	Sara morotí	Corteza del tallo	56	59	132	145	110	93	70	80					antidiabético	Infusion, Decoccion
191806	Sen	Hoja				134				6					purgante, laxante	Infusion
191807	Sauco	Hoja	52	35	7	117	28								antiespasmódico, en las gastritis, antipalúdico, combate la hepatitis	Infusion
191808	Sidra	Hoja				113									sedante	Infusion, Decoccion
191809	Siembre viva	Parte aérea	63			151	50	43	20	62	38				tranquilizante, enf. del corazón	Infusion, Decoccion
191810	Siete sangría	Parte aérea	58	47	62/103	86					7				hipotensor, enf. del corazón	Infusion, Decoccion
191811	Suelta con suelta	Parte aérea		12	9						21	11			abortivo, diurético, histeralgia	Infusion, Decoccion Maceracion en agua fría
191812	Sulco	Planta entera	64	21	108	3					71				en las gastritis, flatulencias	Infusion, Decoccion
191813	Samu-ú	Corteza								86					Sin datos	
191814	San Francisco sombrero	Parte aérea							91						antiespasmódico	Infusion, Decoccion
191815	San Roque bastón	Planta entera							69						combate la hemorroides	Decoccion

T -

201901	Tamandá cuna	Hoja	74			81			84						contraceptivo, para los dolores de lumbago, antifebrilítico	Infusion, Decoccion
201902	Tapeche	Planta entera	61	55	117	15	53	29	26			17			abortivo, dermatitis, para lavar bebidas	Infusion, Decoccion
201903	Taperya-hú	Raíz			139			115	87	52	105				antiparasitario	Infusion, Decoccion
201904	Taropé	Planta entera	17	66	17	7	47	33	49			1			abortivo, para purificar la sangre, enf. Venereas, combate las infecciones agudas	Infusion, Decoccion
201905	Taruma-í	Hoja			118		41	24							combate los dolores del lumbago, enf. hepaticas, enf. renales	Infusion, Decoccion

N.º	NOMBRE VULGAR PARTE UTILIZADA	F E C H A												USOS	EMPLEO	
		21/V	11/M	28/W	1/X	26/X	27/X	30/I	13/II	6/III	31/III					
201906	Tatú ruguay Parte aérea			97	14	33	52	58					78		en la apendicitis, enf. renales, afrodisiaco	Infusion, Decoccion
201907	Tereiopelo Flor				69										en la taquicardia	Infusion, Decoccion
201908	Tayuya Raíz	26		143	51		110	93							abortivo, antipiretico, en la ictericia	Infusion, Decoccion
201909	Teyú caá Parte aérea			113	50	29							40	6	enf. del corazon, para mejorarla riston antiparasitario	Infusion, Decoccion
201910	Tilo Flor			127	139	9	60/123						8	24	tranquilizante, sedante	Infusion
201911	Toronjil guazu Parte aérea			106		46							20		enf. del estomago, enf. del corazon, digestivo, flatulencias	Infusion, Decoccion
201912	Toronjil Paraguay Parte aérea	20	49	80			17	33							enf. del estomago, tranquilizante, enf. del corazon	Infusion, Decoccion
201913	Toro rati Parte aérea			82	46	12		45						80	antitusígeno, amigdalitis, faringitis	Infusion, Decoccion
201914	Tupasy camby Planta entera	18	23	33	11	69	3	54						4	refrescante, amigdalitis, para combatir la frialdad, vaginitis	Infusion, Maceracion en fria
201915	Typchá karatu Parte aérea	8	67	78	2	37	7	25						16	en las micciones dolorosas, enf. hepaticas- digestivo, combate la ulcera	Infusion, Decoccion
201916	Toronjil Parte aérea							58							enf. del corazon	Infusion, Decoccion
201917	Toro caá bový Parte aérea							46							franquilizante	Infusion, Decoccion
201918	Typchá acá voto Planta entera						31								antidiarreico	Infusion, Decoccion
201919	Toro caá morotí Parte aérea													59	purifica la sangre	Infusion, Decoccion
201920	Toro caá bový (2) Parte aérea													62	tranquilizante	Infusion, Decoccion

U -

212001	Urucú Semilla				89	123							81		purifica la sanger, en las quemaduras, combate la cefalea	Infusion, Decoccion
212002	Uruperó Rongo				87	138	98	89							hemostatico	Infusion
212003	Urusú estí Raíz	22			120	101									antiparasitario	Infusion, Decoccion
212004	Urusu bee Raíz	36	14	42	23	90	97	81						101	antitusígeno, expectorante, combate la bronquitis	Infusion, Decoccion

V -

222101	Verbena Parte aérea				148									59	en las amigdalitis, purifica la sangre	Infusion, Decoccion
222102	Verbena-í Parte aérea	23	56	44		10		27						77	en las amigdalitis, purifica la sangre	Infusion, Decoccion
222103	Vira-vira Planta entera			102	111									79	combate la bronquitis, enf. hepaticas	Infusion

N <sup>o</sup>	NOMBRE VULGAR PARTE UTILIZADA	F E C H A												USOS	EMPLEO		
		21/V	11/W	28/W	1/X	28/X	27/X	30/I	13/II	6/III	31/III	19					
Y-																	
252401	Yacaré Yrupé Planta entera				104	75					66						Infusion
252402	Yaguareté caá Parte aérea	40			131			116	23	60							Decocion
252403	Yaguá rová Raíz	30	29	50	19	94	90					106					Infusion, Decocion Maceracion en agua fria
252404	Yaguarundi Hoja	51	30	8	115	40	42					5					Infusion, Decocion
252405	Yateí caá Sumidad florida	39		131	106	74	51				61						Decocion
252406	Yatevú caá Planta entera	54	10	43				14	7								Maceracion en agua fria
252407	Yva hai Hoja	62	37	6	73	5	9					12					Infusion, Decocion Maceracion en agua fria
252408	Yvyrá pyta Corteza	38			74		95			41							Infusion, Decocion
252409	Yerba buena Parte aérea	16	40	121	23			31				95					Infusion, Decocion Maceracion en agua fria
252410	Yerba de lucero Parte aérea	49	39	15	27	59	40					57					Infusion, Decocion
252411	Yerba mate Hoja				107												Infusion
252412	Ynga Corteza				75												Infusion, Decocion
252413	Ypevú caá Planta entera			76					1								Infusion, Decocion
252414	Ysy Gomorresina			137	43	109	94			91							emplasto
252415	Yataýva Fruto					140				43							sa usa como vasija tomar agua
252416	Ysypó peré Raíz	60	57	24	24	93	78	88				99					Infusion, Decocion
252417	Yta potý Planta entera				132	65	63	9	67								Infusion, Decocion
252418	Yva hai pony Planta entera				93												Infusion, Decocion Maceracion en agua fria
252419	Yua pecá Rizoma			136	72		109					87					Infusion, Decocion Maceracion en agua fria
252420	Yuruveva Hoja	47		122		60				67							Infusion, Decocion
252421																	
252422	Yvopé Fruto			145		115				44							fruto macha cado (externo)
252423	Yvyrá tai Hoja				91	44						33					Decocion Maceracion en agua fria
252424	Yerba mata Parte aérea	71				38						28					Infusion, Decocion Maceracion en agua fria
252425	Yahape Raíz		21									103					Infusion, Decocion Maceracion en agua fria
252426	Yvyrá ovi Corteza					118				39							Infusion, Decocion

Nº Y -	NOMBRE VULGAR. PARTE UTILIZADA	F E C H A												USOS	MPLEO
		21/V	11/M	28/W	1/X	28/X	27/XI	30/Y	13/II	6/III	31/III				
252427	Yta poty del campo Planta entera						62							antihemorroidal	Infusion, Decoccion
252428	Yerba de pollo Planta entera						56						4	en los empachos	Infusion, Decoccion
252429	Ysyó hu Raíz							73	53	100				ent. renales, afrodisiaco	Infusion, Decoccion
252430	Yryvú caá Parte aérea							76	63	61				antiasmático, diuretico	Infusion, Decoccion
252431	Yateí caá esavy Parte aérea								70					en la apendicitis	Infusion, Decoccion
252432	Ysau caá Parte aérea							83	90	69				antiparasitario	Infusion, Decoccion
252433	Ysy Hoja								92					antiasmático	Infusion, Decoccion
252434	Yvope Hoja							42						tranquilizante	Infusion, Decoccion
252435	Ynambú caá Planta entera							29						hipotensor	Infusion, Decoccion
252436	Yryvú canilla Parte aérea							85						antiasmático	Infusion, Decoccion

1 2 9

262501	Zarza mora	Raíz	72	60	105									diuretico, purifica la sangre, antiséptico	Decoccion
262502	Zarzaparrilla	Raíz	4	16	19	124	99	108	78	85				diuretico, refrescante	Maceracion en agua fria
262503	Zapallo	Semilla					108	81		19				antipiretico	Decoccion

Table 1-b

PLANTAS FRESCAS MEDICINALES UTILIZADAS EN EL PARAGUAY  
- ADQUIRIDAS EN EL MERCADO 4 - ASUNCIÓN

Ejemplares de herbario

11-VII-1985			
1. Cocú	5	64. Suico	3
2. Perdudilla	2	65. Tapecué	7
8. Mbaracayá nambí	5	66. Taropé	2
9. Mbaracayá nambí	3	67. Tÿpÿchá kuratũ	4
13. Ceba caballo	2	68. Cambará	4
15. Cangorosa	2	69. Curupay-mí	2
17. Romero	2	70. Pata de buey	4
18. Yerba buena	2	73. Doradilla	5
19. Ruda	1	75. Mastuerzo	3
22. Menta-í	2	28-VIII-1985	
23. Tupasÿ cambÿ	7	76. ÿpecú caá	1
26. Cardo santo	1	77. Retama	3
28. Pipí	2	78. Tÿpÿchá kuratũ	1
30. Yaguarundi	6	79. Camambú	2
31. Cola de caballo	2	80. Toronjil	1
33. Mbocayá	2	81. Agosto poty	1
35. Sauco	2	82. Toro ratí	1
36. Salvia	3	83. Canchalagua	4
37. ÿva hai	2	84. Poleo-í	1
39. Yerba de lucero	3	85. Poleo guazú	3
40. Agrial	1	86. Mora	1
41. Ñangapirÿ	4	87. Orégano	1
43. Apio Paraguay	3	88. Albahaca blanca	1
44. Caá piky	3	89. Cumandá ÿvÿrái	3
47. Siete sangría	2	91. Doradilla crespá	1
48. Eucalipto	4	92. Alhucema	1
49. Toronjil Paraguay	5	93. Caraguata-í	1
50. Burrito	3	95. Caarurupé	1
51. Albahaca	2	96. Altamisa	1
52. Cedrón Paraguay	3	97. Tatú ruguay	2
54. Palmita	3	98. Pyno-í	1
55. Aguapé puruá	2	99. Apio	1
56. Verbena-í	4	100. Altamisa	1
60. Ñandypá	2	101. Mbuy	1
61. Calaguala	4	102. Vira vira	1
62. Molle-í	4	103. Siete sangria	1

104. Capi-una	1
105. Cedrón Paraguay	1
106. Toronjil guazú	1
107. Albahaca morada	1
108. Poleo-í	2
108 b. Póleo-í	1
109. Molle	1
110. Pata de buey-í	1
111. Naranja agria	1
112. Arachichú	2
113. Teyú caá	1
114. Canela	2
115. Mboy caá	1
116. Caavó tÿreÿ	2
117. Tapeçué	2
118. Taruma-í	2
119. Doctorcito	2
120. Anguyá ruguay	1
121. Cedrón capii	1
122. Yuruvera	3
123. Perejil(raíz)	1
124. Guayaba	1
125. Rábano	1
126. Aguacote	1
127. Tilo	1
128. Borraja	1

1-X-1985

1. Ñangapilý	3	66. Cerraja	1
2. Typychá curatú	2	70. Capií catí	1
4. Eucalipto	3	71. Ambaý	1
5. Hinojo	1	73. Yva haí	1
7. Taropé	1	77. Aguapé puruá	1
8. Llanten	2	78. Cocú(especie diferente?)	1
9. Orégano	1	82. Mbuy-say yú	1
10. Menta-í	1	83. Cola de ratón.	1
11. Tupasý cambý	2	86. Siete sangría	2
13. Apio Paraguay	1	91. Ývýrá tai(hoja).	1
14. Tatú ruguay	1	92. Curupay-mí	1
15. Tapecué	1	93. Ýva hai-poñy	2
20. Pata de buey	1	94. Caavó tyrey	1
21. Cedrón. capií	1	95. Malva de olor	2
25. Albahaca	2	96. Alfalfa	2
26. Arachichú	2	105. Culantrillo	1
27. Yerba de lucero	1	106. Yateí caá	2
28. Ruda	1	107. Yerba mate	1
29. Poleo-í	1	108. Suico	2
30. Malva de castilla	2	109. Menta-í	2
32. Tapecué = 15	1	111. Vira-vira	2
34. Pacholí	1	112. Cambará	2
35. Caraguatá ruá	1	114. Salvia né	2
36. Pata de buey-í	1	115. Yaguarundí	1
37. Cocú	4	117. Sauco	3
38. Penicilina	1	118. Malva blanca(flora)	1
39. Caá piky	3	121. Yerba buena	2
40. Calaguala	1	123. Para-para í	2
44. Cabello de ángel	1	125. Laurel de España	1
46. Toro ratí	2	126. Cumandá Ývýra-i	3
48. Pyno-í	2	127. Perdudilla blanca	1
49. Mastuerzo	2	128. Marcela	3
50. Teyú caá	1	130. Romero	1
52. Altamisa-í	2	131. Yaguareté caá	3
53. Canchalagua-í	2	132. Ytá potý	2
54. Ajenjo	2	133. Mbocayá(hojas)	1
55. Rábano	1	141. Ceba caballo	2
57. Perdudilla negra	2	144. Burrito	1
61. Penacho(flora)	1	148. Verbena	2
62. Llanten de agua	out	153. Doradilla	1
63. Caataí	1	154. Cedrón. Paraguay	2
64. Mbaracayá nambí	2	143. Mbaracayá nambí	3
65. Caaré(planta entera)	1	22. Cangorosa	1



28-XI-1985

1. Mamón. macho(flor)	3	44. Cedrón capií	3
2. Laurel de España	3	45. Para-para'í	3
3. Suico	5	46. Toronjil guazú	3
4. Llanten de tierra	3	47. Taropé	3
5. Yva hai	2	48. Cedrón Paraguay	4
6. Poleo de Castilla	4	49. Aguacate	6
7. Altamisa	3	50. Siempre viva	2
8. Anguyá ruguay	2	51. Ñandypá	3
9. Tildó	3	52. Ceba caballo	2
10. Verbena-í	4	53. Tapecué	4
11. Burrito	3	54. Penicilina	3
12. Toro rati	4	55. Agrial	3
13. Ajenjo	2	56. Albahaca	4
14. Caarurupé	3	57. Hinojo	3
15. Caraguatá ruá	2	58. Toronjil	5
16. Espartillo guazú	5	59. Yerba de lucero	2
17. Ambay say yú	1	60. Yuruvena	5
18. Lengua de vaca	3	61. Chirca melosa	2
19. Poleo-í	6	62. Llanten de agua	2
20. Pipí	4	63. Cangorosa	1
21. Mandarina(hojas)	4	64. Orégano	1
22. Laurel hú	3	65. Ytá potý	1
23. Yerba buena	5	66. Cabello de ángel	1
24. Mastuerzo	2	67. Canchalagua-í	2
25. Malva blanca	3	68. Aguapé puruá	2
26. Salvia	3	69. Tupasý cambý	2
27. Calaguala	3	70. Culantrillo	3
28. Sauco	4	71. Barba de choclo	1
29. Teyú caá	2	72. Doctorcito	3
30. Palmita	2	73. Perchicaria	3
31. Cola de caballo	3	74. Yateí caá	4
32. Romero	2	75. Yacaré yrupé	1
33. Tatú ruguay	3	76. Mbocaya-í	1
34. Ñangapiry	5	77. Culantrillo arroy	2
35. Menta	5	78. Poleo de menta	1
36. Apio Paraguay	2	79. Pata de buey-í	4
37. Týpýchá kuratũ	3	80. Pata de buey	7
38. Alcanfor	2	81. Eucalipto	2
39. Perdudilla	3	82. Eucalipto	3
40. Yaguarundi	2	83. Eucalipto	3
41. Taruma-í	7	84. Santa Lucía	3
42. Ruda	2	85. Perejil(raíz)	2
43. Cocú	3	141. Cambará	3

27-XII-1985

1. Poleo-í	1	34. Malva blanca	3
2. Menta-í	3	35. Cumandá yvyrá-í	3
3. Tupasy cambý	2	36. Llanten de tierra	3
4. Perdudilla	2	37. Albahaca	3
5. Caaré	3	38. Yerba mata	2
6. Cola de caballo	2	39. Burrito	4
7. Typychá curatũ	4	40. Yerba de lucero	4
8. Calaguala	2	41. Mastuerzo	2
9. Yva hai	6	42. Yaguarundí	3
10. Mbocayá(Plántula)	1	43. Siempre viva	2
11. Aguapé puruá	2	44. Yvyrá tai	2
12. Alcanfor del campo	2	45. Capi-uná	4
13. Cocú	6	46. Toro caá hovy	3
14. Yatevú caá	1	47. Cedrón Paraguay	4
15. Hinojo	7	48. Romero	2
16. Ceba caballo	2	49. Ruda	2
17. Toronjil Paraguay	2	50. Caí arroz	3
18. Nuati-pe	6	51. Yateí caá	1
19. Cambará	3	52. Tatu. ruguay	2
20. Ambay	3	53. Laurel de España	2
21. Cabello de ángel	2	54. Molle-í	2
22. Para-para'i	3	55. Marcela	6
23. Arachichú	2	56. Yerba de pollo	2
24. Doctorcito	2	57. Espartillo-í	4
25. Salvia	2	58. Camambú	3
26. Ajenjo	3	59. Nangapiry	3
27. Alhucema	3	60. Tilo	2
28. Perdudilla negra	1	61. Eucalipto	2
29. Tapequé	7	62. Ytá potý del campo	2
30. Kino-kino	3	63. Ytá potý	1
31. Typychá acá voto	1	64. Penacho(flora)	1
32. Pata de buey	4	65. Capií pýtá	2
33. Taropé	1		

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1. Ypecú-caá	1	32. Rabano	2
2. Mbaracayá nambí	6	33. Toronjil Paraguay	2
3. Llanten de tierra	2	34. Perdudilla	5
4. Alhucema	2	35. Molle	4
5. Hinojo	2	36. Ambay	1
6. Albahaca	3	37. Capiipé poi	1
7. Yatevú caá	1	38. Burrito	3
8. Poleo-í	2	39. Para-para í	4
9. Ytá potý	3	40. Nandypá	4
10. Ruda macho	1	41. Pipí	4
11. Ruda	1	42. Yvopé	12
12. Cola de caballo	3	43. Caraguatá ruá	2
13. Salvia	5	44. Mbocayá	1
14. Santa Lucía morotí	1	45. Toro ratí	4
15. Capií catí	1	46. Cangorosa	2
16. Cedron Paraguay	4	47. Doradilla	4
17. Agrial	2	48. Alcanfor del campo	1
18. Palmita	2	49. Taropé	2
19. Altamisa	4	50. Ajenjo	1
20. Siempre viva	4	51. Mastuerzo	2
21. Penacho	2	52. Malva blanca	3
22. Margarita pytá	6	53. Nangapirý	5
23. Yaguareté caá	4	54. Tupasý cambý	6
24. Taruma-í	11	55. Cabello de ángel	2
25. Týpychá curatū	6	56. Menta	4
26. Tapecué	2	57. Espartillo-i	1
27. Verbena-í	6	58. Tatú ruguay	2
28. Cocú	3	59. Mamón macho	2
29. Ynambú caá	3	60. Caravá caá	4
30. Calaguala	2	61. Caarurupé	2
31. Yerba buena	4		

## 6-III-1986

1. Taropé	4	42. Chicoria	1
2. Ñangapirý	3	43. Llanten. de tierra	3
3. Para-para <sup>í</sup>	4	44. Ruda macho	2
4. Tupasý cambý	7	45. Salvia	3
5. Yaguarundí	4	46. Ambaý	3
6. Poleo-í	4	47. Calabacita	5
7. Siete sangría	4	48. Doctorcito	10
8. Ñuati-pé	7	49. Agrial	12
9. Mbocayá-í	3	50. Mburucuyá(flora)	1
10. Malva blanca	6	51. Anguyá ruguay	6
11. Ceba caballo	2	52. Penachō	3
12. Yva hai	4	53. Cardo santo(raíz)	1
13. Cedrón Paraguay	6	54. Marcela	7
14. Perdudilla blanca	10	55. Chirca melosa	5
15. Burrito	5	56. Calagualla	7
16. Týpýchá kuratū	9	57. Yerba de lucero	6
17. Tapecué	7	58. Mboi caá	9
18. Albahaca morada	7	59. Toro caá moroti	13
19. Caraguatá ruá	0	60. Mbuý saý-yú	20
20. Culantrillo arroyo	15	61. Ýrývu caá	8
21. Suelta con suelta	3	62. Toro caá hový(2)	11
22. Toronjil guazú	10	63. Doradilla negra	3
23. Cambará	9	64. Molle-í	3
24. Tilo	6	65. Ñangapirý(Esp.dif.?)	6
25. Aguapé puru-á	2	66. Ñandypá	4
26. Espartillo guazú	2	67. Cabello de ángel	3
27. Penicilina	5	68. Ajenjo	6
28. Yerba mata	2	69. Ýsau caá	4
29. Raído sombrero	4	70. Cedrón capii	2
30. Espartillo-í	4	71. Suico	3
31. Alhucema	2	72. Cocú	4
32. Curupaý-mí	8	73. Albahaca del campo	3
33. Ývýrá tai	6	74. Cangorosa	2
34. Ñangapirý(Esp.dif.?)	2	75. Eucalipto	4
35. Romero	2	76. Cola de caballo	3
36. Poleo-í(Esp.dif.?)	7	77. Verbena-í	3
37. Caaré	7	78. Tatú ruguay	4
38. Siempre viva	3	79. Purguilla	15
39. Pata de buey	3	80. Toro ratí	4
40. Teyú caá	2	81. Capi-uná	4
41. Ruda	2	82. Doradilla crespa	3

## 3I-III-1986

83. Caarurupé	2	1. Mbaracayá nambí	7
84. Santa Lucía	5	2. Mbaracayá nambí(3)	19
85. Zarzaparrilla	---	3. Alfalfa	24
86. Capií-pe poi	2	4. Yerba de pollo	7
87. Yuá pecá	---	5. Rábano	11
88. Mburucuyá(Raíz)	---	6. Teyú caá	8
89. Batatilla	---	7. Espartillo guazú	5
90. Caña brava	---	8. Yva hai poñy	3
91. Pynó guazú(Raíz)	---	9. Chicoria	4
92. Malva(corteza de raíz)	---	10. Canela	5
93. Charruá caá	3	11. Suelta con suelta	3
94. Capií catí	1	12. Kino-kino	5
95. Yerba buena	3	13. Burro caá	9
96. Caraguatá(Raíz)	---	14. Doradilla	8
97. Nuatí pýtá	3	15. Capii pororó	6
98. Menta-i	4	16. Culantrillo arroyo	4
99. Ysypó peré	2	17. Mandiyú-rá	1
100. Ysypó hú	---	18. Capií pýtá	3
101. Urusú heé	---	19. Yacaré Yrupé	4
102. Mecho acá	---		
103. Wahãpe	2		
104. Mil hombre	---		
105. Taperývá hú(Raíz)	3		
106. Yaguá rová	---		
107. Piri(se cultivó)			

Table 1-c Preparar un Informe sobre Encuesta de Plantas Medicinales

Nº	NOMBRE VULGAR	PARTE UTILIZADA	NOMBRE CIENTIFICO	FAMILIA
A-				
010001	Agosto poty	Parte aerea	Senecio grisebachii Baker	(Compositae)
010002	Agrial	Parte aerea	Begonia semperiflorens Linketotto	(Begoniaceae)
010003	Aguacate	Hoja	Persea gratissima Gaernt	(Lauraccae)
010004	Aguapé puru-a	Hoja	Eichhornia crassipes(Mart)Solms	(Pontederiaccae)
010005	Ajenjo	Parte aerea	Artemisia absinthium L.	(Compositae)
010006	Albahaca blanca	Semilla	Ocimum basilicum L.	(Labiatae)
010007	Albahaca blanca	Sumidad florida		
010008	Albahaca morada	Hoja		
010009	Alcanfor del campo	Parte aerea		
010010	Alfalfa	Parte aerea	Medicago sativa L.	(Leguminosae)
010011	Alhucema	Parte aerea	Lavandula latifolia Vill.	(Labiatae)
010012	Almigue	Fruto		
010013	Altamisa	Parte aerea	Ambrosia elatior L.	(Compositae)
010014	Altamisa-i	Parte aerea	Ambrosia tenuifolia Spreng	(Compositae)
010015	Ambay	Hoja	Cecropia adenopus Mart	(Moraceae)
010016	Anguá ruguay	Planta entera	Polypodium vacciniifolium Lr. F.	(Polypodiaceae)
010017	Anis	Fruto	Pimpinella anisum L.	(Umbelliferae)
010018	Apio Paraguay	Planta entera	Pipo sp.	(Umbelliferae)
010019	Arachichu	Fruto	Solaum nigrum L.	(Solanaceae)

Nº	NOMBRE VULGAR	PARTE UTILIZADA	NOMBRE CIENTIFICO	FAMILIA
010020	Azafrán	Flor	Carthamus tinctorius L.	(Compositae)
010021	Aromita	Flor	Acacia farnesiana (L.) Willd	(Leguminosae)
010022	Amapola	Flor	Papaver sp.	(Papaveraceae)
010023	Andaí	Semilla	Cucurbita maxima	(Cucurbitaceae)
010024	Algarrobo	Corteza	Prosopis rusCIFolia Gris P. alba Gris P. nigra (Gris) Hih	(Leguminosae)
010025	Ambaÿ saÿ yú	Hoja		
010026	Albahaca del campo	Planta entera		
010027	Azafran	Semilla	Carthamus tinctorius L.	(Compositae)
B-				
020101	Batatilla	Raíz	Pfiaffia glauca (Mart) Spreng	(Amarantaceae)
020102	Barba de maíz	Estigma	Zea mays L.	(Gramineae)
020103	Boldo	Hoja	Boldea boidus (Molina) Looser	(Monimiaceae)
020104	Borraja	Flor	Borrego officinalis L.	(Borraginaceae)
020105	Burrito	Parte aérea	Minhostachys mollis kunth	(Labiatae)
020106	Burro caa	Parte aérea	Cassearia silvestris Sw.	(Flacurtiaceae)
C-				
030201	Caa hee	Hoja	Stevia rebaudiana Bert	(Compositae)

Nº	NOMBRE VULGAR	PARTE UTILIZADA	NOMBRE CIENTIFICO	FAMILIA
030202	Caá piký	Planta entera	Parietaria debilis Forst	(Urticaceae)
030203	Caare	Planta entera	Chenopodium anthelminticum L.	(Chenopodiaceae)
030204	Caaré	Semilla	"	"
030205	Caarurupe	Raíz	Boerhaavia paniculata Rich	(Nictagiaceae)
030206	Caataí	Planta entera	Polygonum acre H.B.K.	(Polygonaceae)
030207	Caavó tyreý	Planta entera	Phoradendrum rubrum (L.) Griseb	(Lorantaceae)
030208	Cabello de angel	Parte aérea	Cuscuta xanthochortos Fngeim	(Convolvulaceae)
030209	Calabacita	Parte aérea	Momordica charantia L.	(Cucurbitaceae)
030210	Calaguala	Parte aérea	Polypodium phyllitidis L.	(Polypodiaceae)
030211	Cambara	Hoja	Gochnatia polymorpha (Less) Cab.	(Compositae)
030212	Camambú	Parte aérea	Physalis viscosa L.	(Solanaceae)
030213	Caña brava	Rizoma	Costus pilgeri Sch	(Zingiberaceae)
030214	Canchalagua	Planta entera	Schkuhria abrotanoides Roth	(Compositae)
030215	Canchalagua - í	Parte aérea		
030216	Canela	Hoja		
030217	Cangorosa	Hoja, corteza de raíz	Maytenus ilicifolia Mart.	(Celastraceae)
030218	Capií catí	Raíz	Kyllingia adorata Vahl	(Cyperaceae)
030219	Capi - una	Parte aérea	Bindens pilasa L.	(Compositae)
030220	Caraguata - í	Planta entera	Eryngium. Sp.	(Umbelliferae)
030221	Caraguata	Fruto	Bromelia balansae Mez	(Bromeliaceae)
030222	Caraguata	Raíz	"	"



Nº	NOMBRE VULGAR	PARTE UTILIZADA	NOMBRE CIENTIFICO	FAMILIA
030223	Caroba (Jacaranda)	Corteza		
030224	Caraguata rúa	Hoja	Eryngium floribundum Cham	(Umbelliferae)
030225	Cardo santo	Planta entera	Argemone mexicana L.	(Papaveraceae)
030226	Cardo santo	Semilla	"	"
030227	Catuaba	Hoja		
030228	Caygua-í	Semilla		
030229	Cebada Paraguay	Semilla	Hordeum Sp.	(Gramineae)
030230	Cedron capií	Hoja		
030231	Cedron Paraguay	Parte aerea	Lippia triphylla Kuntze	(Verbenaceae)
030232	Ceibo	Corteza	Erythrina crista-galli L.	(Leguminosae)
030233	Cepa caballo	Parte aerea	Xanthium spinosum L.	(Compositae)
030234	Cerraja	Parte aerea	Sonchus oleraceus L.	(Compositae)
030235	Charrua caa	Raíz	Stevia entrepriensis Hier	(Compositae)
030236	Chicoria	Raíz	Hypochoeris microcephala (Sch Bip) Cabr	(Compositae)
030237	Chirca melosa	Parte aerea	Baccharis articulata Pers	(Compositae)
030238	Cocú	Hoja	Allophylus edulis (St.Hil Juse et Camb) Radrk	(Sapindaceae)
030239	Cola de caballo	Planta entera	Equisetum giganteum L.	(Equisetaceae)
030240	Curupaý curú	Corteza		
030241	Culantrillo	Planta entera	Adiantum cuneatum L.	(Polypodiaceae)
030242	Culantrillo arroyo	Planta entera		
030243	Cumanda yvira-í	Parte aerea	Cajanus cajan (L.) Millsp	(Papilionoideae)

Nº	NOMBRE VULGAR	PARTE UTILIZADA	NOMBRE CIENTIFICO	FAMILIA
030244	Curatú	Semilla		
030245	Curugúa	Fruto	Sicana cderifera Naud.	(Cucurbitaceae)
030246	Curuguai	Semilla		
030247	Curupáy-mi	Parte aérea	Porophyllum laceolatium D.C.	(Compositae)
030248	Curupica-ý	Corteza		
030249	Cebadilla	Parte aérea		
030250	Cumanda pire	Vaina	Phaseolus vulgare L. var sp.	(Leguminosae)
030251	Cái arroz	Parte aérea		
030252	Capií pyta	Parte aérea		
030253	Capií-pe poi	Rizoma	Paspalum vaginatum Sw.	(Gramineae)
030254	Cana de azúcar	Flor	Sacharum officinarum L.	(Gramineae)
030255	Cangorosa	Corteza de raíz	Maytenus ilicifolia Mart	(Celastraceae)
030256	Caavovetí	Flor		
030257	Culantrillo caavý	Planta entera		
030258	Cái cuchara	Pericarpio		
030259	Cedrilla	Corteza		
030260	Cavara caa	Parte aérea	Salvia sp.	(Labiatae)
030261	Cardo santo	Raíz	Argemone mexicana L.	(Papaveraceae)
030262	Capií pororo	Planta entera		

%	NOMBRE VULGAR	PARTE UTILIZADA	NOMBRE CIENTIFICO	FAMILIA
D-				
040301	Doctorecito	Hoja	Astroceupatorium inulaefolium K. et R.	(Compositae)
040302	Doradilla	Parte aerea	Gymnopteris rufa (L.) Bernh	(Pteridofitas)
040303	Doradilla crespa	Parte aerea	Cheilcnthes microphylla Sw.	(Pteridofitas)
040304	Doradilla negra	Planta entera		
E-				
050401	Eneldo	Fruto	Anethum graveolens L.	(Umbelliferae)
050402	Espartillo-i	Parte aerea	Bulbostylis capillaris (L.) Kumth	(Cyperaceae)
050403	Eucalipto	Hoja	Eucaliptus sp.	(Myrtaceae)
050404	Espartillo guazu	Parte aerea		
050405	Espinillo	Corteza		
G-				
070501	Girasol	Semilla	Helianthus annuus L.	(Compositae)
070502	Granada	Epicarpio	Punica granatum L.	(Punicaceae)
070503	Guavira	Fruto		
070504	Guayaba	Parte aerea	Psidium guajava L.	(Myrtaceae)
070505	Guayacan	Corteza	Caesalpinia melanocarpa Griseb.	(Leguminosae)
070506	Guayacan	Aserrin de corteza	"	

Nº	NOMBRE VULGAR	PARTE UTILIZADA	NOMBRE CIENTIFICO	FAMILIA
070607	Guavira-mí	Fruto	Campomanesia xanthocarpa Berg	(Myrtaceae)
H-				
080701	Hinojo	Raíz	Foeniculum vulgare Hill	(Umbelliferae)
080702	Higo	Hoja		
080703	Hinojo	Fruto	Foeniculum vulgare Hill	(Umbelliferae)
I-				
090801	Incienso	Corteza	Myrocarpus frondosus Fr. Allem	(Papilionoideae)
K-				
111001				
111002	Kino-kino	Parte aérea	Chenopodium glaucum L.	(Chenopodiaceae)
L-				
121101	Laurel de Espana	Hoja	Laurus nobilis L.	(Lauraceae)
121102	Llanten de agua	Planta entera	Pistia stratiotes L.	(Araceae)
121103	Llanten de tierra	Planta entera	Plantago tomentosa Lam	(Plantaginaceae)
121104	Lapacho colorado	Corteza	Tabebuia sp.	(Bignoniaceae)
121105	Laurel hu	Hoja	Nectandra sp.	(Lauraceae)
121106	Lengua de vaca	Planta entera		

Nº	NOMBRE VULGAR	PARTE UTILIZADA	NOMBRE CIENTIFICO	FAMILIA
121107	Lima purúa	Epicarpio, jugo		
121108	Lino	Semilla	<i>Linum usitatissimum</i> L.	(Linaceae)
M-				
131201	Malva blanca	Sumidad florida	<i>Sida cordifolia</i> L.	(Malvaceae)
131202	Malva de Castilla	Parte aérea		
131203	Malva de olor	Parte aérea		
131204	Malva rapó piré	Corteza de la raíz	<i>Sida cordifolia</i> L.	(Malvaceae)
131205	Mango	Flor	<i>Mangifera indica</i> L.	(Aracordiacae)
131206	Manzanilla	Flor	<i>Matricaria chamomilla</i> L.	(Compositae)
131207	Marcela	Parte aérea	<i>Achyrocline satureioides</i> (Lam) DC.	(Compositae)
131208	Mastuerzo	Parte aérea	<i>Lipidium bonariense</i> L.	(Cruciferae)
131209	Mbaracaya nambí	Planta entera	<i>Dichondra repens</i> Fort	(Convolvulaceae)
131210	Mbaracaya nambí (2)	Planta entera		
131211	Mbaracaya-puapé	Raíz		
131212	Mbocaya-í rapó	Raíz		
131213	Mbocaya	Plantula	<i>Acrocomia totai</i> Mart	(Polmae)
131214	Mboy caa	Parte aérea	<i>Iresine celosioides</i> L.	(Amarantaceae)
131215	Mburucuyá	Flor	<i>Passiflora alata</i> Ait.	(Passifloraceae)
131216	Mbuy saÿ-yú	Planta entera	<i>Solidago chilensis</i> Meyer	(Compositae)
131217	Mburucuya-í	Raíz	<i>Passiflora</i> sp.	(Passifloraceae)

Nº	NOMBRE VULGAR	PARTE UTILIZADA	NOMBRE CIENTIFICO	FAMILIA
131218	Mecho aca	Raíz	<i>Ipomoea bonariensis</i> Hook	(Convolvulaceae)
131219	Menta	Parte aerea		
131220	Menta-í	Hoja		
131221	Molle	Planta entera		
131222	Molle-í	Planta entera		
131223	Mora	Hoja		
131224	Mamon macho	Flor	<i>Carica papaya</i> L.	(Caricaceae)
131225	Melón	Semilla	<i>Cucumis</i> sp	(Cucurbitaceae)
131226	Mil hombre	Tallo	<i>Aristolochia triangularis</i> Chem et Schlecht	(Aristolochiaceae)
131227	Mbocaya	Flor	<i>Acrocomia totai</i> Mart	(Palmae)
131228	Madreselva	Flor		
131229	Mandarina	Hoja		
131230	Mostaza	Semilla		
131231	Macagua' caa	Parte aerea	<i>Sida paniculata</i> L.	(Malvaceae)
131232	Margarita pyta	Planta entera		
131233	Mbaracaya nambi (3)	Planta entera		
131234	Mandiyu-ra	Raíz	<i>Ipomoea</i> sp.	(Convolvulaceae)
N-				
141301	Naranja agria	Hoja	<i>Citrus</i> sp.	(Rutaceae)
141302	Naranja dulce	Epicarpio	<i>Citrus Sinensis</i> (L.) Osbach	(Rutaceae)

Nº	NOMBRE VULGAR	PARTE UTILIZADA	NOMBRE CIENTIFICO	FAMILIA
N-				
141351	Ñandýpa	Hoja	Genipa americana L.	(Rubiaceae)
141352	Ñangapirý	Hoja	Eugenia uniflora L.	(Myrtaceae)
141353	Ñuati pyta	Raíz	Solanum sisimbriifolium Lam	(Solanaceae)
141354	Ñuati pe	Planta entera	Soliva anthemifolia (Jus) Bron	(Compositae)
141355	Ñandýpa	Corteza	S. macrocephala Cab. =141351	
O-				
151401	Orégano	Planta entera	Origanum vulgare L.	(Labiatae)
P-				
161501	Pacholí	Parte aérea		
161502	Palmita	Hoja		
161503	Paraíso	Raíz		
161504	Para-para í	Planta entera	Phyllanthus orbiculatus D. C. Richard	(Euphorbiaceae)
161505	Paratodo ptre	Corteza del tallo	Tabebuia caraiba Mart	(Bignoniaceae)
161506	Pata de buey	Hoja	Bauhinia sp.	(Leguminosae)
161507	Pata de buey-í	Hoja	Bauhinia guaranitica Lindm	(Leguminosae)
161508	Penacho	Flor		
161509	Penicilina	Hoja		
161510	Perdudilla blanca	Parte aérea		

Nº	NOMBRE VULGAR	PARTE UTILIZADA	NOMBRE CIENTIFICO	FAMILIA
161511	Perdudilla negra	Planta entera		
161512	Perejil	Raíz	<i>Petroselinum crispum</i> (Mill.) A.W.Hill	(Umbelliferae)
161513	Pindo	Raíz	<i>Arecastrum romanzoffianum</i> Becc.	(Palmae)
161514	Pipi	Planta entera	<i>Petiveria alliacea</i> L.	(Phytolaccaceae)
161515	Poleo guazu	Parte aérea		
161516	Poleo-í	Hoja		
161517	Pyno guazu	Raíz		
161518	Pyno-í	Parte aérea	<i>Urtica urens</i> L.	(Urticaceae)
161519	Palo santo	Tallo	<i>Bulnesia sarmientoi</i> Lorentz	(Zigofiliaceae)
161520	Poleo de Castilla	Parte aérea		
161521	Poleo de menta	Parte aérea		
161522	Perchicaria	Planta entera		
161523	Pacova hu	Rizoma		
161524	Pety hú	Hoja		
161525	Purguilla	Planta entera		
161526	Pirí	Raíz		
Q-				
171601	Quebracho blanco	Corteza	<i>Aspidosperma quebrachobranco</i> Schlecht	(Apocynaceae)



Nº	NOMBRE VULGAR	PARTE UTILIZADA	NOMBRE CIENTIFICO	FAMILIA
R-				
181701	Rabano	Parte aerea		
181702	Retama	Parte aerea		
181703	Romero	Parte aerea	Rosmarinus officinalis L.	(Labiatae)
181704	Rosa china	Flor		
181705	Rosa mosqueta	Flor	Rosa rubiginosa L.	(Rosaceae)
181706	Ruda	Parte aerea	Ruta graveolens L.	(Rutaceae)
181707	Ruibarbo	Raiz	Cypella coriifolia Baquen	(Iridaceae)
181708	Rosa pyta ite	Flor		
181709	Rosa del campo	Flor		
181710	Ruda macho	Parte aerea		
181711	Raído sombrero	Sumidad florida		
S-				
191801	Salvia	Sumidad florida		
191802	Salvia ne	Sumidad florida	Lippia globiflora O.K.	(Verbenaceae)
191803	Sandia	Semilla		
191804	Santa Lucía morotí	Raiz	Commelina phatylphylla Seub	(Commelinaceae)
191805	Sara morotí	Corteza del tallo	Citharexylum myrianthum Cham	(Verbenaceae)
191806	Sen	Hoja	Cassia angustifolia Vohl	(Leguminosae)
191807	Sauco	Hoja	Sambucus australis Chan. et Sch.	(Caprifoliaceae)

Nº	NOMBRE VULGAR	PARTE UTILIZADA	NOMBRE CIENTIFICO	FAMILIA
191808	Sidra	Hoja		
191809	Siempre viva	Parte aérea	Gomphrena perennis L.	(Amaranthaceae)
191810	Siete sangría	Parte aérea	Cuphea racemosa (L. f.) Spreng	(Lythraceae)
191811	Suelta con suelta	Parte aérea		
191812	Suico	Planta entera	Tagetes minuta L.	(Compositae)
191813	Samu-u	Corteza	Chorisia speciosa St. Hil.	(Bombacaceae)
191814	San Francisco Sombrero	Parte aérea	Leonorus sp.	(Labiatae)
191815	San Roque baston	Planta entera		
T-				
201901	Tamandá cuna	Hoja	Catasetum barbatum Lindle.	(Orchidaceae)
201902	Tapeque	Planta entera	Acanthospermum australe O.K.	(Compositae)
201903	Taperyvá-hu	Raíz	Cassia occidentalis L.	(Leguminosae)
201904	Taropé	Planta entera	Dorstenia brasiliensis Lam.	(Moraceae)
201905	Taruma-i	Hoja		
201906	Tatú ruguay	Parte aérea	Stachytar phetacayenensis Vohl	(Verbenaceae)
201907	Terciopelo	Flor		
201908	Tayuya	Raíz	Cayaponia Sp.	(Cucurbitaceae)
201909	Teyú caa	Parte aérea		
201900	Tilo	Flor		
201901	Toronjil guazu	Parte aérea		

Nº	NOMBRE VULGAR	PARTE UTILIZADA	NOMBRE CIENTIFICO	FAMILIA
201912	Toronjil Paraguay	Parte aerea	Melissa officinalis L.	(Labiatae)
201913	Toro rati	Parte aerea	Acanthospermum hispidum DC.	(Compositae)
201914	Tupasy cambý	Planta entera		
201915	Týpýcha kuratú	Parte aerea	Scoparia dulcis L.	(Scrophulariaceae)
201916	Toronjil	Parte aerea		
201917	Toro caa hový	Parte aerea		
201918	Týpýcha acá voto	Planta entera		
201919	Toro caa morotí	Parte aerea		
201920	Toro caa hový (2)	Parte aerea		
U-				
212001	Urucú	Semilla	Bixa orellana L.	(Bixaceae)
212002	Uruperó	Hongo		
212003	Urúsú catí	Raíz		
212004	Urúsú hee	Raíz	Rhynchosia hagenbeckii Harms	(Leguminosae)
V-				
222101	Verbena	Parte aerea		
222102	Verbena í	Parte aerea	Verbena bonariensis L. Verb.	(Verbenaceae)
222103	Vira-vira	Planta entera	Gamochaeta spicata (Lam) Cabs	
			G. pensylvanica Will Cabs	(Compositae)

Nº	NOMBRE VULGAR	PARTE UTILIZADA	NOMBRE CIENTIFICO	FAMILIA
252401	Yacaré yrupe	Planta entera	Victoria cruziana Orbn.	(Nymphaeaceae)
252402	Yaguarate caa	Parte aerea	Baccharis microcephala (Less) DC.	(Compositae)
252403	Yagua rova	Raiz	Jatropha isabelli Muell Arg.	(Euphorbiaceae)
252404	Yaguarundi	Hoja	Piper fulvescens C.D.C.	(Piperaceae)
252405	Yateí caa	Sumidad florida	Achyrocline alata DC.	(Compositae)
252406	Yatevú caa	Planta entera	Peperomia cyclophylla C.D.C.	(Piperaceae)
252407	Yva hai	Hoja	Eugenia myrcianthes Niedenzu	(Myrtaceae)
252408	Yvira pyta	Corteza	Peltophorum dubium (Spreng) Tamb	(Leguminosae)
252409	Yerba buena	Parte aerea		
252410	Yerba de lucero	Parte aerea	Pluchea sagittalis Lam.	(Compositae)
252411	Yerba mate	Hoja	Ilex parguariensis Sant.Hil	(Aquifoliaceae)
252412	Ynga	Corteza	Inga Sp.	(Leguminosae)
252413	Ypecú caa	Planta entera		
252414	Ysy	Gomorresina	Protium heptaphyllum (Anth) Mart.	(Burseraceae)
252415	Yatayva	Fruto		
252416	Ysyó peré	Raiz	Cuphea lysimachioides Cham. et Schl.	(Lythraceae)
252417	Yta poty	Planta entera		
252418	Yva hai pony	Planta entera		
252419	Yua peca	Rizoma	Smilax campestris Gris	(Liliaceae)
252420	Yuruveva	Hoja	Soianum Sp.	

Nº	NOMBRE VULGAR	PARTE UTILIZADA	NOMBRE CIENTIFICO	FAMILIA
252421				
252422	Yvope	Fruto	Gleditsia amorphoides Taub.	(Leguminosae)
252423	Yvra tai	Hoja	Pilocarpus pennatifolius Lan	(Rutaceae)
252424	Yerba mata	Parte aerea		
252425	Yahape	Raiz		
252426	Yvra ovi	Corteza	Esenbeckia densiflora Hassler	(Rutaceae)
252427	Yta poty del campo	Planta entera		
252428	Yerba de pollo	Planta entera	Portulaca pelosa L.	(Portulacaceae)
252429	Ysypo hu	Raiz		
252430	Yryvu caa	Parte aerea		
252431	Yatei caa caavy	Parte aerea		
252432	Ysau caa	Parte aerea		
252433	Ysy	Hoja	= 252414	
252434	Yvope	Hoja	= 252422	
252435	Ynambu caa	Planta entera		
252436	Yrvu canilla	Parte aerea		
Z-				
262501	Zarza mora	Raiz		
262502	Zarzaparrilla	Raiz		
262503	Zapallo	Semilla	Cucurbita sp.	(Cucurbitaceae)

Table 2

Plantas colectadas por Botanica

15-VII-'85	Cuenca del Lago Ypacarai, Paraguari			
	Altamisa	2	Salvia	2
	Burro caá	3	Santa Lucia	4
	Caá piký	2	Taperýva hú	1
	Perchicarica	4	Yuá pecã	2
	Pipí	2	Yvyrá ovi	3
5-VIII-'85	Campus Universitario - San Lorenzo			
	Caapeva	2		
	Huimoneja	8		
13-VIII-'85	Campus Universitario - San Lorenzo			
	Piperaceae (2)	10		
	Yaguarundi	2		
16-VIII-'85	Avda. Mcal. López - San Lorenzo			
	Caapeva	9	Ñuati pýta	10
	Malva blanca	4	Taperyvá hú	4
20-VIII-'85	Chaco Km. 11, Km-54, Km-124, Km-165			
	Aromita	6	Molle-mi	2
	Cai Kygná	2	Paratodo	2
	Camombú	8	Sara-i	2
	Cumandá yuyra-i	3	Typycha pato	2
	Llanten de agua	2	Ybyrá-mi	2
	Mburucuya-i	5		
21-VIII-'85	Valle-Arequá-Dpto. Central			
	Agrial	2	Guayaba	3
	Burro caá	4	Paraíso	6
	Caapeva	6	Pata de buey	3
29-VIII-'85	Tobatí			
	Agosto potý	2	Taperývá	2
2-IX-'85	Avda. Mcal. López-San Lorenzo			
	Cardo santo	2	Vinca	10
	Patito	7		

6-IX-'85 Paraguari costa II

Chirca	2	Piper(No.3)	2
Culantrillo	3	Yva hai	3
Cardo santo	2		

11-IX-'85 Chaco-Km-127

Aromita	5	Suelta con suelta	5
Camambú	8		

3-X-'85 Paraguari costa II

Agosto poty	5	Eneldo	1
Cardo santo	2	Malcela	4
Chicoria	4	Mil hombre	20
Cola de raton	1	Piperaceae (2)	5
Culantrillo	9	Yva hai	6
Curatú	7		

15-X-'85 Arroyos y Esteros-Dpto.Cordillera

Borraja	3		
Zarzaparrilla	3		

21-X-'85 Campus Universitario - San Lorenzo

Ambay	5	Piperaceae	7
Sará morotí	7	Yaguarandí	8

27-X 4/XI-'85 Chaco-Tinfunqué

Aquapé-puruá		Mbúrúcüya	
Altamisa		Pata de buey-i	
Caarurupé		Perdudilla negra	
Caaré		Paratodo	
Caatai		Quebracho blanco	
Cabello de ángel		Salvia	
Cepa caballo		Tamandá cuná	
Guayacán		Taperývá-hú	
Llanten de tierra		Verbena-i	
Mandiyú-rá		Yvoty caarú	
Mastuerzo			

11-XI-'85 Capiatá-Dpto.Central

Sará morotí	10		
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14-XI-'85 Caaguazú-Km.158

Cedron capii	11	Tayuyá	10
Cocú	13		

22-XI-85 Paraguari-Costa 11

Araticuí	10	Mil hombre	12
Cocú	2	Para para-i	2
Cedron capi-í	2	Sara moroti	2
Guayaba	9	Taropé	2
Malva blanca	10	Ysy	2
Marcela	2	Yvopé	2

18-19-XII-85 Pirapo, Caarendy, Trinidad

Agrial	Cola de caballo
Alcanfor del campo	Eucalipto
Batatilla	Guayaba
Caí arroz	Hinojo
Calaguala	Hui moneja
Caña brava	Inga
Caavoveti	Labiada-San Francisco
Caraguata	Mboi cáa
Molle	Tung
Molle-i	Verbena-i
Pynó guazú	Yaguareté cáa
Pata de buey	Yerba mate
Sauco	Yuá say yú
Suelta con suelta	

28-XII-'85 La Colmena

Yaguá rová

18-XII-'85 Campus Universitario-San Lorenzo

Cambará	Poleo
Penicilina	Salvia

30-I-'86 Campus Universitario-San Lorenzo

Yuyrá pytá

13-II-'86 Campus Universitario-San Lorenzo

Mandiyurá	Eucalipto
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10-III-'86 Asunción-Dpto. Central

Pata de buey

13-III-'86 Campus Universitario-San Lorenzo

Doctrucito

Malva blanca

Malvavisco

Mbuy saŷ yú

18-III-'86 Caacupé-Dpto. Cordillera

Salvia-né

Urucú

1 3-IV-'86 Dpto. Amambay

Caá heé

Colita

Caavoveti

Laurel hú

Caí arroz

Nandypá

Geibo

Samu-ú

Caña brava

Tarope-i

Capií catí

Týpŷchá curatũ

Caraguatá

Verbena-i

Cedrillo

Zarzaparrilla

Cedron capii

Cassia sp.

Charrúa caá

Table 3

MATERIALES PARA EXTRACTO

LUGAR	FECHA	NOMBRE VULGAR	PARTE COLECTADA	GRAMOS
Costa II-Paraguari	3-X-85	Culantrillo	Parte aérea	110
	"	Piper No.3	Hojas	105
	"	Mil hombre	Tallo	585
	"	Araticuí	Parte aérea	338
Campus Universita- rio	21-X-85	Ambay	Hojas	173.2
	"	Yaguarudí	Hojas	144.8
	"	Piper sp No.2	Hojas	71.4
	"	Sará motorí	{ Hojas Corteza	117.5 123.2
Chaco Paraguayo	28-X-85	Cabello de ángel	Parte aérea	33.2
	"	Aguapé puru-á	{ Parte aérea Raíz	268.2 309.2
	"	Caaré	{ Hojas Raíz	261.7 101.4
	29-X-85	Perdudilla negra	Planta entera	323.6
	30-X-85	Caatai	Planta entera	467.7
	"	Altamisa	Parte aérea	368.5
	"	Pata de buey-í	{ Hojas Tallo verde	643.4 172.4
	"	Capa caballo	Parte aérea	395.5
	"	Salvia né	Sumidad florida	464.4
	"	Verbena-í	Parte aérea	200.7
	"	Tamandá cuná	{ Hojas Raíz	157.6 65.6
	31-X-85	Taperyvá-hú	{ Hojas Raíz	291.5 152.4
	"	Quebracho blanco	Corteza	1271.5
	"	Llanten de tierra	Planta entera	110.6
	"	Paratodo	{ Corteza Hojas	571.9 134.5
	"	Mandiyú-rá	{ Parte aérea Hojas	413.7 121.1
	"	Guayacán	Corteza	1060.2
	"	Yvoty caarú		40.4
	"	Caarurupé	Raíz	189.5

LUGAR	FECHA	NOMBRE VULGAR	PARTE COLECTADA	GRAMOS		
Caplatá	11-XI-85	Sará morotí	Hojas	2000		
			Corteza	2000		
Caaguazú	14-XI-85	Cocú	Parte aérea	1981.2		
			Tallo	630		
	"	Cedron capii	Hojas	2151		
			Tayuyá	84		
Costa II-Paraguari	22-XI-85	Yvopé	Hojas (fresca)	310		
			Taropé	23.6		
	"	Para-para'i	Planta entera	92.4		
	"	Malva blanca	Sumidad florida	146.9		
	"	Guayaba	Hojas	284.1		
	"	Araticu-i	Hojas	48.6		
	"	Ysy	Hojas	314.7		
	"	Marcela	Parte aérea	32		
	"	Mil hombre	Tallo	2269.8		
			Hojas	117.3		
Campus Universit- ario	12-XII-85	Poleo-i	Raíz(Tallo)	654.3		
			Parte aérea	1200		
			"	Cambará	Hojas	1160
			"	Penicilina	Hojas	488.7
			"	Salvia	Sumidad florida	2242.7
CEDEFO (Pirapó)	18-XII-85	Molle	Parte aérea	680		
			"	Pynó guazú.	Raíz	400.8
			"	Yvyra pyta	Corteza	1168.4
Caarendy(Itapúa)	18-XII-85	Calaguala	Planta entera	313.9		
			"	Pindó	Raíz	214.9
			"	Sauco	Parte aérea	227.8
			"	Caña brava	Rizoma	81.4
			"	Alcanfor de hoja	Planta entera	133.2
Trinidad(Itapúa)	19-XII-85	Cola de caballo	Parte aérea	123.2		
			"	Caraguatá ruá	Parte aérea	124.3
			"	Molle-i	Parte aérea	922.2
			"	Yaguareté caá	Parte aérea	540.6
La Colmena	28-XII-85	Yaguá rová	Raíz	507.3		

### MATERIALES PARA EXTRACTO

<u>Parque Nacional "Cerro Corá" (Dpto. Amambay)</u>		2-IV-86
1. Cedrón capíí	Planta entera	
2. Caí arroz	Planta entera	
3. Curupaý curú	Corteza	
4. Cedrillo	Corteza	
5. Laurel hú	Hojas	
6. Caraguatá	Fruto	
<u>Horqueta (Dpto. Concepcion)</u>		3-IV-86
7. Nandýpá	Hojas	
<u>San Estanislao (Dpto. San Pedro)</u>		3-IV-86
8. Ceibo	Corteza	
9. Týpýchá curatũ	Parte aérea	
10. Capií catí	Rizoma	
<u>Colonia Jejuí (Dpto. San Pedro)</u>		3-IV-86
11. Samu-ú	Corteza	

### RECOLECCION DE CASSIA PARA ELECTROFORESIS

1. Carayao	(Dpto. San Pedro)	1-IV-86
2. Jejuí	"	1-IV-86
3. Pedro Juan Caballero	(Dpto. Amambay)	2-IV-86
4. Tacuara	(Dpto. Concepción)	

Table 4-a

CULTIVO DE PLANTAS

Se cultivaron plantas traídas de su habitat natural y adquiridas en el Mercado No 4. Las formas de cultivo fueron:

- a. Por esqueje
- b. Planta entera
- c. Raiz
- d. Semilla

Formas de Cultivo	Nombre de las Plantas	ORIGEN	En Brotación	TRANSPLANTE		
				De su habitat	De maritas	De esquejes
1. ESQUEJE	Verbena í		+	-		Se Transp.
	Molle		+	-		-
	Toronjil		-			-
	Menta í		-			-
	Yerba de Lucero		+			Se Transp.
	Typycha Kuratú		-			-
	Ruda		+			-
	Yva hai	Mercado 4	-			-
	Burrito		+			Se Transp.
	Cedrón Paraguay		-			-
	Ñangapiry		+			Se Transp.
	Chirca melosa		-			-
	Cambará		-			-
	Para todo		-			-
	Meliaceae		-			-
	Sará Morotí		-			-
	Albahaca		-			-
	Malva de olor		-			-
	Alfalfa		-			-
	Santa Lucia		+			Se Transp.
	Ambay	San Lorenzo	+			-
	Poleo í	(Campus Un-	+			-
	Cambará	versitario)	-			-
	Cangorosa		+			-
	Cocu	Caaguazú	-			-
	Rosa Paraguay	Caacupé	-			-
	Pacová hú		+			-
	Mbuy say yú		-			-

Formas de Cultivo	Nombre de las Plantas	ORIGEN	En Brotación	TRANSPLANTE		
				De su habitat	De maritas	De esquejes
2. RAIZ	Batatilla		+		Se Transp.	
	Yagua royá	Mercado 44			Se Transp.	
	Curupaymí		-		-	
	Suelta con Suelta		-		-	
	Tayuya	Caaguazú	-		-	
3. RIZOMA	Zarzamora		-			
	Mecho acá		+		Se Transp.	
	Calaguala		-			
	Urusu he!é		+		Se Transp.	
	Santa Lucia		+		Se Transp.	
	Curuya y mi		+		Se Transp.	
	Mbaracaya		+		Se Transp.	
	Cardo Santo		-		-	
	Tapecué		-		-	
	Apoio. Paraguay		+		Se Transp.	
	Doradilla		+		Se Transp.	
	Pijí		+		Se Transp.	
	Taropé		-			
	Siete Sangría		+		Se Transp.	
	Hinojo		+		Se Transp.	
	Mbocaya		+		Se Transp.	
	Pyno i		-		-	
	Capii by		+		Se Transp.	
Typycha curatú		-		-		
4. PLANTA ENTERA	Urugano		-		-	
	Menta	Mercado 4				
	Cedrón Capií					
	Arachichú		-			
	Yerba de lucero		+		Se Transp.	
	Caaarurupé		-			
	Taro ratí		-			
	Mastuerzo		-			
	Altamisa i		-			

Formas de Cultivo	Nombre de las Plantas	ORIGEN	En Brotación	TRANSPLANTE		
				De su habitat	De maritas	De esquejes
PLANTA ENTERA	Canehalagua-i		-			
	Perdudilla negra		-			
	Caatai		-			
	Mbaracaya nambí		-			
	Capii catí		-			
	Aguapé puruá		-			
	Mbuy say yú		-			
	Vira vira		-			
	Para para í		-			
	Mbaracayá nambí (especie diferente)		-			
	Cepa caballo		+		-	
	Caña brava		-		-	
	Albahaca				-	
	Mbojoré		+		-	
	Alcanfor del campo		+			
	Guayaba		-		-	
	Mbocaya	Isala Valle	+	Se Transp.		
	Yaguareté ca'a	Piribebuy	+	Se Transp.		
	Taveryvá	Tobatí	+	Se Transp.		
	Mil hombre		-		-	
	Tarope	Costa II (Paraguarí)	-		-	
	Cangorosa	Paraguari	-		-	
	Para todo	Cerro Coza	+	Se Transp.		
	Cedrón capii	Caaguazú	+	Se Transp.		
	Molle		-		-	
	Calaguala		-		-	
	Cola de caballo	Pirapó	-		-	
	Alismataceae		+	Se Transp.		
	Ruda hembra		+			
	Ruda macho		+			
	Romero		+			
	Alhucema	Caacupé	+			
	Siempre viva		+			

Formas de Cultivo	Nombre de las Plantas	ORIGEN	En Brotación	TRANSPLANTE		
				De su habitat	De maritas	De esquejes
PLANTA ENTERA	Teyu ca'á		+			
	Palo santo		-			
	Para todo		+	Se transp.		
	Verde olivo		+	Se transp.		
	Pata de Buey í		+	Se transp.		
	Tamanda cuná		+	Se transp.		
	Aromita		+	Se transp.		
	Ludwidgia	Chaco	+	Se transp.		
	Alismatáceae		+	Se transp.		
	Mandyurá		+	Se transp.		
	Camanbaí		-			
	Salvia		+	Se transp.		
	Ca i Kyguá		-			
	Mburucuya í		+	Se transp.		
	Santen de agua		+	Se transp.		
	Euforbiaceae		-			
	Tayuya		-			
	Caarurupé		+	Se transp.		
	Carandilla		+	Se transp.		
	Quebracho blanco		+	Se transp.		
	Yvy á		-			
	Caaré	San Lorenzo	+	Se transp.		
	Suico	(Ruta Macal.)	+	Se transp.		
	Cardo Santo	López)	-			
5. SEMILLA	Angelicea	Japón	-			
	Bupleurum		-			
	Mburucuya		+			
	Guayaba	Brasil	+			
	Pino		+			
	Yelba mate		+			
	Paraiso	Pirapó	+			
	Eucalipto	(CEDEFO)	+			
	Lapacho					



Formas de Cultivo	Nombre de las Plantas	ORIGEN	Brotación	TRANSPLANTE		
				De su habitat	De marítas	De enquejes
6. EN MASETAS	Lapacho amarillo		+			
	Lapacho rosado		+			
	Aguai guazú		+			
	Ingá	Vivero de Itaipú	+			
	Caroba guazú		+			
	Ñangapiry		+			
	Yvyrá pytá		+			
	Avaticu í		+			
	Caña brava		+			
	Cocú		+			

Table 4-b

LISTA DE PLANTAS EN EL JARDIN DE ACLIMATACION

Nombre de la Planta	ORIGEN
Aromita	
Alismatae	
Para todo	Chaco
Verde olivo	
Mburucuya í	
Pata de buey í	
Mandyurá	
Salvia	
Llanten de agua	
Alismatae	Pirapó
Yaguareté caá	Piribebuy
Mburucuyá	
Guayaba	Brasil
Suico	San Lorenzo
Batatilla	
Burrito	Mercado 4
Mbojore	
Yerba de lucero	
Cedrón capii	Caaguazú
Taperyva	Tobati
Cedrón Capii	Caaguazú

LISTA DE PLANTAS EN CANTEROS

Verbena í	
Menta í	
Curuguá	Mercado 4
Paková hu	
Mbocaya	Isla Valle
Romero	
Allvecima	
Ruda hombre	
Ruda macho	Caacupé
Rosa Paraguay	
Tejú ca'á	

Table 5-a

## EXTRACTOS PREPARADOS A TEMPERATURA AMBIENTE (JUNIO-SETIEMBRE DE 1985)

NOMBRE DE LA PLANTA	(1) ORIGEN	PESO DE (2) MUESTREO (gr)	PESO DEL (3) EXTRACTO (gr)	DESTINO DEL EXTRACTO
Piper No.1	CU	732,0 <sup>(*)</sup>	43,9	ENVIADO A TOYAMA EL 07/07/85
Piper No.2	CU	938,0 <sup>(*)</sup>	51,1	" " " " "
Ambay	CU	1.000,0 <sup>(*)</sup>	65,1	" " " " "
Sara Morqti	CU	978,0 <sup>(*)</sup>	137,8	" " " " "
Para para'i	Y	1.000,9	77,9	" " " " "
Typyoha curatu	Y	849,2	74,6	" " " " "
Mil hombre	Y	985,3	49,0	" " " " "
Marcela	Y	947,5	85,2	ENVIADO A TOYAMA EL 30/07/85
Alhucema	Y	1.049,0	56,9	" " " " "
Yaguarundi	Y	947,8	63,0	" " " " "
Cola de Caballo	Y	1.021,3	22,0	" " " " "
Romero	Y	944,6	44,8	" " " " "
Burrito	Y	1.022,6	47,4	" " " " "
Cedron Capi'i	Y	1.091,0	138,3	" " " " "
Espartillo Guazu	Y	129,6	13,2	" " " " "
Colita	Y	998,9	48,9	" " " " "
Eucalipto	Y	973,2	75,3	" " " " "

NOMBRE DE LA PLANTA	(1) ORIGEN	PESO DE (2) MUESTRA (gr)	PESO DEL (3) EXTRACTO (gr)	DESTINO DEL EXTRACTO
Pluchea sagittalis	CHS	1.000,0	110,4	REFRIGERADO EN LAB. DE FITOQUIMICA
Quebracho	CHS	1.048,0	24,3	" " " " "
Camambu.	B	840,0	43,0	" " " " "
Pistia	B	1.232,0	17,4	" " " " "
Bahuinia	B	522,0	52,8	" " " " "
Begonia	B	437,0	8,0	" " " " "
Paratodo	B	1.000,6	70,2	" " " " "

OBSERVACION: CU = colectado por el grupo Fitoquímica en el Campus Universitario.

Y = adquirido de Yamawaki Hnos. por los expertos japoneses.

CHS = colectado por G. Schmeda en el Chaco.

B = colectado por el grupo de Botánica.

\* = material fresco

(3) = peso del extracto concentrado hasta consistencia siruposa.

**EXTRACTOS PREPARADOS EN CALIENTE (SETIEMBRE 1985-MARZO 1986)**

NOMBRE DE LA PLANTA	ORIGEN	PESO DE MUESTRA (gr)	PESO DEL EXTRACTO (gr)	DESTINO DEL EXTRACTO
Para para'i	Y	3.700,0	533,0	ENVIADO A TOYAMA EL 06/11/85
Cangorosa	Y	500,0	111,0	ENVIADO A TOYAMA EL 07/12/85
Siete sangrías	Y	491,0	62,0	" " " " "
Cedrón Paraguay	Y	505,0	67,2	" " " " "
Siemprevive	Y	500,6	39,0	" " " " "
Burrito	Y	533,0	50,0	" " " " "
Marcela	Y	500,0	63,0	" " " " "
Alhucema	Y	500,0	89,0	" " " " "
Yaguarundi	Y	500,0	69,0	" " " " "
Eucalipto	Y	500,0	122,9	" " " " "
Romero	Y	500,0		" " " " "
Ka'a he'ë	Y	200,0	73,0	" " " " "
Espartillo guazu	Y	100,0	21,0	" " " " "
Cola de caballo	Y	100,0	13,6	" " " " "
Aromita	BCH	110,0	24,6	" " " " "
Chirca melosa	BCH	100,0	30,2	" " " " "
Culantrillo	BCH	100,0	23,7	" " " " "

NOMBRE DE LA PLANTA	ORIGEN	PESO DE MUESTRA (gr)	PESO DEL EXTRACTO (gr)	DESTINO DEL EXTRACTO
Piper No.3	B	100,0	13,4	ENVIADO A TOYAMA EL 07/12/85
Typyohá curatú	Y	2.200,0	276,2	ENVIADO A TOYAMA EL 06/11/85
Yva hai	Y	3.000,0	159,0	" " " " "
Tapecué	Y	2.000,0	216,0	ENVIADO A TOYAMA EL 07/12/85
Sara Moroti(hojas)	B	100,0	L	EN EL LABORATORIO DE FITOQUIMICA
Amba'y(hojas)	B	100,0	L	" " " " "
Yaguarundi(hojas)	B	100,0	L	" " " " "
Piper No.2(hojas)	B	65,0	L	" " " " "

NOMBRE DE LA PLANTA	ORIGEN	PESO DE MUESTRA(gr)	PESO DEL EXTRACTO(gr)	DESTINO DEL EXTRACTO
Sara Morotí(corteza)	B	100,0	19,0	ENVIADO A TOYAMA EL 07/12/85
Altamisa	BCH	100,0	L	EN EL LABORATORIO DE FITOQUIMICA
Ka'are(raíz)	BCH	88,0	L	" " " " "
Ka'are(parte aérea)	BCH	100,0	L	" " " " "
Perdudilla negra	BCH	100,0	L	" " " " "
Quebracho blanco (cortezá)	BCH	100,0	L	" " " " "
Cepa caballo(parte aerea)	BCH	100,0	L	" " " " "
Ca'atai	BCH	100,0	L	" " " " "
Paratodo(hojas)	BCH	100,0	L	" " " " "
Pata de buey*i(hojas y tallo verdes)	BCH	100,0	L	" " " " "
Salvia	BCH	100,0	L	" " " " "
Aguapé puru'a	BCH	103,0	L	" " " " "
Cabello de angel	BCH	22,7	L	" " " " "
Ybope(hojas)		310,0(*)	L	" " " " "
Araticui(parte aérea)	BP	131,0	L	" " " " "

OBSERVACIONES: BCH = colectado por el grupo de Botanica en el Chaco.

BP = colectado por el grupo de Botanica en Paraguari.

Y = adquirido de Yamawaki Hnos.

B = colectado por el grupo de Botanica

\* = material fresco

(3) = peso del extracto liofilizado

L = extracto congelado para liofilizar.

Table 5-b

EXTRACTOS CONCLUIDOS

San Lorenzo, 14-IV-86

1- Caatai

Recepción: 12-XI-85

Origen: Chaco. Colectado por Botánica

P. muestra: 100g. (material seco molido en Fitoquímica)

V. solvente: 1,9 L.

P. extracto: 22.5g. (liofilizado)

2- Caaré (raíz)

Recepción: 7-XI-85

Origen: Chaco. Colectado por Botánica

P. muestra: 88g. (material seco molido en Fitoquímica)

V. solvente: 2,1 L.

P. extracto: 13.0g. (liofilizado)

3- Caaré (parte aérea)

Recepción: 7-XI-85

Origen: Chaco. Colectado por Botánica

P. muestra: 100g. (material seco molido en Fitoquímica)

V. solvente: 1,8 L.

P. extracto: 19.8g. (liofilizado)

4- Paratodo (hojas)

Recepción: 12-XI-85

Origen: Chaco. Colectado por Botánica

P. muestra: 90g. (material seco molido en Fitoquímica)

V. solvente: 1,7 L.

P. extracto: 14.7g. (liofilizado)

5- Altamisa-ité

Recepción: 7-XI-85

Origen: Chaco. Colectado por Botánica

P. muestra: 100g. (material seco molido en Fitoquímica)

V. solvente: 1,8 L.

P. extracto: 14.9g. (liofilizado)

- 6- Yaguarundi  
Recepción: 6-XI-85  
Origen: Campus universitario. Colectado por Botánica  
P. muestra: 100g. (hojas secas, molidas en Fitoquímica)  
V. solvente: 1,5 L.  
P. extracto: 12.3g. (liofilizado)
- 7- Piper sp. No.2  
Recepción: 6-XI-85  
Origen: Campus universitario. Colectado por Botánica  
P. muestra: 100g. (hojas secas, molidas en Fitoquímica)  
V. solvente: 1,3 L.  
P. extracto: 23g. (liofilizado)
- 8- Ambay  
Recepción: 6-XI-85  
Origen: Campus universitario. Colectado por Botánica  
P. muestra: 100g. (hojas secas, molidas en Fitoquímica)  
V. solvente: 1,8 L.  
P. extracto: 23g. (liofilizado)
- 9- Sará morotí (hojas)  
Recepción: 6-XI-85  
Origen: Campus universitario. Colectado por Botánica  
P. muestra: 100g. (hojas secas, molidas en Fitoquímica)  
V. solvente: 1,7 L.  
P. extracto: 28.6g. (liofilizado)
- 10- Salvia (parte aérea)  
Recepción: 15-XI-85  
Origen: Chaco. Colectado por Botánica  
P. muestra: 100g. (material seco, molido en Fitoquímica)  
V. solvente: 2,2 L.  
P. extracto: 9g. (liofilizado)
- 11- Ybopé (parte aérea)  
Recepción: 22-XI-85  
Origen: Costa 2a. - Paraguari. Colectado por el Prof. Yoshizaki  
P. muestra: 310g. (hojas frescas)  
V. solvente: 4,8 L.  
P. extracto: 29.7g.

- 12- Cabello de ángel (parte aérea)  
 Recepción: 21-XI-85  
 Origen: Chaco. Colectado por Botánica  
 P. muestra: 22.7g.  
 V. solvente: 1,55 L.  
 P. extracto: 14.0g. (liofilizado)
- 13- Guayaba (parte aérea)  
 Recepción: 5-XII-85  
 Origen: Costa 2a. - Paraguari. Colectado por Botánica  
 P. muestra: 100g.  
 V. solvente: 2,0 L.  
 P. extracto: 27.8g. (liofilizado)
- 14- Araticuí (parte aérea)  
 Recepción: 5-XII-85  
 Origen: Costa 2a. - Paraguari. Colectado por Botánica  
 P. muestra: 131g.  
 V. solvente: 2,15 L.  
 P. extracto: 34,1g. (liofilizado)
- 15- Sará morotí (hojas)  
 Recepción: 5-XII-85  
 Origen: Capiatá. Colectado por Botánica  
 P. muestra: 1946g.  
 V. solvente: 20,7 L.  
 A: Alicuota del extracto original: 36.2g.  
 B: P. extracto hexánico: 19.9g.  
 B: P. precipit. hexánico: 104g.  
 C: P. extracto clorofórmico: 25.4g.  
 D: P. extracto butanólico: 72.2g.  
 E: Extracto acuoso: Congelado (para liofilizar)
- 16- Cola de caballo (P. aerea)  
 Recepción: 10-II-86  
 Origen: Trinidad (Itapúa). Colectado por Botánica  
 P. muestra: 100g.  
 V. solvente: 1,7 L.  
 P. extracto: 13.4g. (liofilizado)



17- Alcanfor de hoja (P. entera)

Recepción: 10-II-86

Origen: Caarendy. Colectado por Botánica

P. muestra: 100.5g.

V. solvente: 1,9 l.

P. extracto: 26.6g. (liofilizado)

18- Sauco (P. aérea)

Recepción: 10-II-86

Origen: Caarendy. Colectado por Botánica

P. muestra: 78.6g.

V. solvente: 1,95 L.

P. extracto: 20.4g. (liofilizado)

19- Molle-i (P. aérea)

Recepción: 10-II-86

Origen: Trinidad (Itapúa). Colectado por Botánica

P. muestra: 100g.

V. solvente: 2,0 L.

P. extracto: 36.3g. (liofilizado)

20- Cambará (hojas)

Recepción: 10-II-86

Origen: Campus universitario. Colectado por Botánica

P. muestra: 100g.

V. solvente: 3 L.

P. extracto: 21.5g. (liofilizado)

EXTRACTOS PREPARADOS PARA LIOFILIZAR

- 1- Perdudilla negra (Planta entera)  
Recepción: 7-XI-85  
Origen: Chaco. Colectado por Botánica  
P. muestra: 100g.  
V. solvente: 1,8 L.
- 2- Quebracho blanco (Corteza)  
Recepción: 12-XI-85  
Origen: Chaco. Colectado por Botánica  
P. muestra: 100g.  
V. solvente: 1,8 L.
- 3- Taperyvá-hú (hojas)  
Recepción: 12-XI-85  
Origen: Chaco. Colectado por Botánica  
P. muestra: 100g.  
V. solvente: 2,1 L.
- 4- Aguapé puruá (raíz)  
Recepción: 12-XI-85  
Origen: Chaco. Colectado por Botánica  
P. muestra: 100g.  
V. solvente: 2,1 L.
- 5- Aguapé puruá (p. aérea)  
Origen: Chaco. Colectado por Botánica  
Recepción: 12-XI-85  
P. muestra: 103g.  
V. solvente: 3,6 L.
- 6- Cepa caballo (P. aérea)  
Recepción: 12-XI-85  
Origen: Chaco. Colectado por Botánica  
P. muestra: 109g.  
V. solvente: 2,4 L.

- 7- Llanten de tierra (planta entera)  
 Recepción: 12-XI-85  
 Origen: Chaco. Colectado por Botánica  
 P. muestra: 100g.  
 V. solvente: 1,9 L.
- 8- Pata de buey-í (P. aérea)  
 Recepción: 15-XI-85  
 Origen: Chaco. Colectado por Botánica  
 P. muestra: 100g.  
 V. solvente: 2,5 L.
- 9- Mandivura (hojas)  
 Origen: Chaco. Colectado por Botánica  
 Recepción: 15-XI-85  
 P. muestra: 100.5g.  
 V. solvente: 2,1 L.
- 10- Tamandá cuná (P. aérea)  
 Recepción: 21-XI-85  
 Origen: Chaco. Colectado por Botánica  
 P. muestra: 100g.  
 V. solvente: 2,2 L.
- 11- Malva blanca (P. aérea)  
 Recepción: 5-XII-85  
 Origen: Costa 2a. - Paraguari. Colectado por Botánica  
 P. muestra: 71.3g.  
 V. solvente: 2,15 L.
- 12- Mil hombre (tallos)  
 Recepción: 22-XI-85  
 Origen: Costa 2a. - Paraguari. Colectado por Botánica  
 P. muestra: 1000g.  
 V. solvente: 12,5 L.
- 13- Yvyrá pytá (corteza)  
 Recepción: 10- II-86  
 Origen: Pirapó. Colectado por Botánica  
 P. muestra: 100g.  
 V. solvente: 1,6 L.

- 14- Calaguala (planta entera)  
Recepción: 10-II-86  
Origen: Caarendy. Colectado por Botánica  
P. muestra: 99g.  
V. solvente: 3,0 L.
- 15- Pindó (tallos)  
Recepción: 10-II-86  
Origen: Caarendy. Colectado por Botánica  
P. muestra: 100g.  
V. solvente: 2,0 L.
- 16- Cocú (parte aérea)  
Recepción: 10-II-86  
Origen: Caaguazú. Colectado por Botánica  
P. muestra: 1245.Ig.  
V. solvente: 11,5 L.
- 17- Penicilina (P. aérea)  
Recepción: 10-II-86  
Origen: Campus universitario. Colectado por Botánica  
P. muestra: 100g.  
V. solvente: 2,2 L.
- 18- Caraguatá (fruto)  
Recepción: 7-IV-86  
Origen: Parque Nacional "Cerro Corá". Colectado por Botánica  
P. muestra: 1006.2g. (fresca)  
V. solvente: 3 L. (Etanol 95 )
- 19- Caraguatá ruá (hojas)  
Recepción: 10-II-86  
Origen: Trinidad (Itapua). Colectado por Botánica  
a-p. muestra: 100g.  
V. solvente: 1,5 L. (2 extracciones)  
b-p. muestra: 24g.  
V. solvente: 0,9 L. (3 extracciones)

MATERIAL MOLIDO PARA EXTRAER

<u>Plantas colectadas en el Chaco por Botánica</u>		<u>Recepción</u>
Verbena-í (planta entera)		15 - XI - 85
Caarurupé (raíz)		21 - XI - 85
Paratodo (corteza)		21 - XI - 85
Taperyvá-hú (raíz)		21 - XI - 85
Guayacán (corteza)		12 - XI - 85
Ysy (hojas)	<u>Costa 2a.- Paraguarí</u>	5 - XII - 85
Sará morotí (corteza)	<u>Capiatá</u>	5 - XII - 85
Yaguareté caá (P. aérea)	<u>Trinidad (Itapua)</u>	10 - II - 86
Molle (P. aérea)	<u>Pirapó</u>	10 - II - 86

Table 6 Biologically active materials (10th July, 1986)

No.	Plant Drugs	Original Plant	Family	Medicinal Part
2	Sará moroti	<i>Citharexylum myrianthum</i> Cham.	Verbenaceae	Leaves
7	Týpýchá-kuratū	<i>Scoparia dulcis</i> L.	Scrophulariaceae	?
9	Cocú	<i>Allophylus edulis</i> (St. Hil Juss et Camb) Rodlk.	Sapindaceae	Branches and leaves ?
10	Colita	<i>Cordia salicifolia</i> Cham.	Boraginaceae	" ?
12	Para-paráí mi	?		
13	Mil hombre	<i>Aristolochia triangularis</i> Chem. et Schlecht.	Aristolochiaceae	Stem
14	Marcela	<i>Achyrocline satureioides</i> (Lam.) DC.	Compositae	Whole plant ?
16	Romero	<i>Rosmarinus officinalis</i> L.	Labiatae	Aerial part, Whole plant ?
19	Alhucema	<i>Lavandula latifolia</i> Medic.	Labiatae	Whole plant
21	Eucalipto	<i>Eucalyptus</i> sp.	Myrtaceae	Leaves ?
25	Siempre viva	<i>Gomphrena perennis</i> L.	Amaranthaceae	Flowering aerial part ?
26	Caá heé	<i>Stevia rebaudiana</i> Bert.	Compositae	Leaves ?
27	Aromita	<i>Acacia farnesiana</i> (L.) Willd	Leguminosae	Flower
28	Chirca melosa	<i>Baccharis articulata</i> Pers.	Compositae	Flowering aerial part
29	Culantrillo	<i>Adiantum cuneatum</i> Langsd. et Fisch.	Polyodiaceae	Aerial part

(continued-1)

31	Cambará	<i>Gochmatia polymorpha</i> (Less) Cab.	Compositae	Leaves
34	Altamisa-ité	<i>Ambrosia artemisiifolia</i> L.	Compositae	Aerial part
37	Caaré	<i>Chenopodium ambrosioides</i> L.	Chenopodiaceae	Root
42	Pindó (rapo)	<i>Arecastrum romanzoffianum</i> Becc.	Palmae	Root
46	Malva blanca	<i>Sida cordifolia</i> L.	Malvaceae	Flowering top of branches
50	Verbena-í			Flowering whole plant
51	Tamandá cuná	<i>Catasetum barbatum</i> Lindl.	Orchidaceae	Aerial part
53	ÿvyrá pýtá	<i>Peltophorum dubium</i> (Spreng.) Tanb.	Leguminosae	Bark
56	ÿvopé	<i>Gleditsia amorphoides</i> Taub.	Leguminosae	Fresh leaves
44	Guayacán	<i>Caesalpinia melanocarpa</i> Griseb.	Leguminosae	Bark
48	Taperývá-hú	<i>Cassia occidentalis</i> L.	Leguminosae	Root

No.	Plant Drugs	Original Plant	Part
5	Nāngapiry	?	
6	Cedron-capii	?	
* 7	Týpýchá-kuratū	<i>Scoparia dulcis</i> L.	Scrophulariaceae ?
8	Tape-cué	?	
* 9	Cocú	<i>Allophlus edulis</i> (St. Hil Juss et Camb)	Sapindaceae Branches and leaves ?
* 10	Colita	<i>Cordia salicifolia</i> Cham.	Boraginaceae Branches and leaves ?
11	Yvahai	?	
* 12	Para-parái mi	?	
* 14	Marcela	<i>Achyrocline satureioides</i> (Lam.) DC.	Compositae Whole plant ?
15	Cola de caballo	?	
* 16	Romero	<i>Rosmarinus officinalis</i> L.	Labiatae Aerial part or whole plant ?
17	Burrito	?	
18	Jaguarundí	?	
* 21	Eucalipto	<i>Eucalyptus</i> sp. ?	Myrtaceae Leaves ?
22	Cangorosa	?	
* 25	Siempre viva	<i>Gomphrena perennis</i> L.	Amaranthaceae Flowering aerial part ?
* 26	Caá heé	<i>Stevia rebaudiana</i> Bert.	Compositae Leaves ?

\* Already requested to botanical section.



## Report on Guidance in Botany

Herbal Garden, Faculty of Pharmaceutical Sciences  
Toyama Medical and Pharmaceutical University,  
Shoichi Suzuki, Assistant Professor,  
Technical Expert, Doctor of Agriculture  
(Dispatched period: May 10-June 9, 1985)

As for the themes of cooperation of research to be borne by this project's Botany Division (Botany Division, Asunción University, and Herbal Garden, Faculty of Pharmaceutical Sciences, Toyama Medical and Pharmaceutical University), following 4 themes were planned at the start of the project.

### 1. Survey of folk medicines and medicinal plants in Paraguay

Survey of market medicines and local, unique medicines; survey and visit of supply sources of market medicines; survey of medicinal plants and their relating species (distribution, ecology, specimen, introduction, etc.)

### 2. Pharmacognosial study of folk medicines in Paraguay

Appraisal of crude drugs by paraffine section method and SUMP method.

### 3. Study of culture science on medicinal plants in Paraguay

Study on propagation method (germination test and propagation test by cuttage); Study of cultivation (time of plantation, and plantation density).

### 4. Study of breeding science on medicinal plants

Detection of geographical variation by external morphology and electrophoresis.

#### Regarding 1:

On May 21 and 22, 1985, the survey and collection of folk medicines and medicinal plants in Paraguay was conducted, together with the stuffs of Asunción University and the short-period dispatched expert from Japan, in the 4th market of Asunción City. The survey was carried out by hearing on plant names, (local names), usable part of a plant, the purpose of use, etc. The medicinal plants (71 items, as in Table 1), obtained during two days, were dried to specimens, after photographs were taken, and were to be put in order and preserved in Botany Division of Asunción University. Thereafter, market survey, the identification of plant species, and the

preparation of specimens have been continued by Japanese Expert, Dr. Yoshizaki and Paraguayan staffs of Botany Division. (Refer to the report of Expert Yoshizaki.)

## Regarding 2:

As for the observing method of external and internal structures of crude drugs and plants, the guidance was conducted on (a) SUMP method and (b) paraffine section method.

### (a) SUMP method

This method fits for the observation of external fine structure of opaque texture, with feature of simplicity and high practicability. This is a method in which one side surface of a celluloid plate is melted with amyl acetate, and the subject specimen is pressed on the surface to make a negative print that will be observed with transmitted light by an optical microscope.

During the visit to Japan of two persons, Nelida and Mirta of Botany Division of Asuncion University as c/p in 1985, a guidance was conducted concerning the way to handle material plants and to make the print, taking several species of *Cassia* genuses of Leguminosae as material. Further, at the time of Dr. Isabel's visit to Japan as c/p in 1986, the same guidance as the previous year was carried out, taking plants of *Datura* genus of Solanaceae as material, and the observation with an optical microscope as well as photograph-taking were practised. It was observed that, among *Datura* genus, in *D. arborea* and *D. suaveolens*, the types of hairs growing on the surfaces of leaves are different.

### (b) Paraffine section method

This is a method in which fixed texture is, after dehydration, embedded into a paraffine block, and then a section of thickness of several microns is cut out from the block with a microtome. This is a common practice to make a permanent specimen for the observation of internal structure of a plant. Similar to SUMP method, observation is carried out with an optical microscope of transmitting type. In the last time adopted method, F.A.A. liquid (F.A.A. liquid is superior for fixing as well as for conserving) was adopted as fixing liquid, n-butyl alcohol series and ethyl alcohol series as dehydrating series, and Delafild's hematoxylin as dying liquid. A rotary microtome was used for cutting out a section. When a rotary microtome is used, a continuous section can be obtained easily, which is convenient for the study of running condition of vacular bundles of plants, etc.

At the time of Dr. Isabel's visit to Japan as c/p in 1986, guidance was conducted, using petioles of *Datura* genus and *Capsicum* genus plants as material, such as from the fixing by F.A.A. liquid to the preparation of permanent sections, and taking of microscopic photographs. Furthermore, the guidance was also practiced on photographs of SUMP as well as a series of technique in a dark-room, such as developing and printing. The distribution of vacular bundles same as described in literature was confirmed in *Datura* genus and *Capsicum* genus plants.

### Regarding 3:

For making cultivation of wild plants, the study on the ways of propagation and cultivation is necessary for each species respectively. However, it was judged that only a part is practicable during this project period. Therefore, it was decided that a way of propagation should be currently deliberated, considering the establishment of a herbal garden of Asuncion University. The ways of propagation are roughly divided into by seeds and by nutritive bodies in which a part of a plant body is used. Since both ways have own merits and shortages, it was decided to adopt seed propagation and cuttage which is a kind of nutritive body propagation, and as for seed materials, the stuff of Botany Division of Asuncion University is currently collecting and preparing. Cuttage test is described as below.

In June 1985, in Asuncion University, guidance was executed on the way of cuttage, and the way of management, using several species of medicinal plants in Paraguay. In addition, at the time of c/p's visit to Japan in 1985 and 1986, cuttage tests on 43 species of medicinal plants were jointly carried out, which were at that time proceeding in Herbal Garden of Toyama Medical and Pharmaceutical University, and on this occasion, the way of cuttage, the management, and the investigation method of results were guided. The tested species of Paraguayan medicinal plants (including trees) as well as the results were described in Table 2. Because of the situation of obtaining materials, the tested numbers of plants were not same, but root development was observed in all adopted species, thus suggesting the possibility of propagation by nutritive bodies. The ratio of root development widely variates from 10% in Ambay to 90% in Cangorosa, so it is considered that the time of cuttage was not likely proper, since June-July season corresponds to autumn in Paraguay. Hence, it will be necessary to find the proper time for cuttage by conducting it hereafter with increased number of species throughout the year.

### Regarding 4:

In order to supply medicinal plants stably, besides the cultivation of wild plants (theme 3), breeding of the varieties of stable, high harvest is necessary. For that purpose, it is essential to make clear the various inherited characters (morphologic characters such as plant height, leaf size, flowering time, flower color, fruit size, seed number, and physiological characters) of the subject plant. Hence, for the purpose of obtaining fundamental knowledges for the improvement of plants in the future, it has been decided that the detection of geographical variation will be attempted by electrophoresis method.

At the time of visit of two persons of Nelida and Mirta as c/p to Japan in 1985, the guidance of pattern analysis of protein was conducted in SDS-PAGE method. Materials to be tested were rhizome of 5 species of *Trichosanths* genus which are cultivated and prepared in Herbal Garden of Toyama Medical and Pharmaceutical University. Tested 5 species indicated distinctly different electrophoresis patterns. Therefore, cluster analysis using coefficient of coincident was carried out, and it was learned that the results did not conflict with existing classification. In the course of this electrophoresis pattern analysis, the guidance on Multivariant Analysis (particularly Cluster Analysis) by using a personal computer was also conducted.

One of the c/p's, Nelida attempted the detection of geographical variation by a similar method, using seeds of *Cassia* genus plants from different districts in Paraguay, but it was said, "No variation was noticed among the tested materials." This result was reported, together with the

introduction of SDS-PAGE method, in a seminar in Asuncion University. Furthermore, screening work for determination of materials to be tested is now being proceeded by her.

Above are the summaries for each theme, while general matters will be mentioned as below.

So far, the installation of laboratory of Botany Division of Asuncion University has been almost completed, and the transfer of fundamental technique to carry out the themes planned at the beginning of this project has been completed except a part of it. Those themes except 1 are probably in a field that has not experienced by Botany Division of Asuncion University. Therefore, after-care relating the above technique transfer and the orientation of further study will be required in the course of processing the joint study hereafter.

From above point of view, on the occasion of Dr. Isabel's visit as c/p to Japan, who is responsible for Botany Division of Asuncion University, a conference was held on topics such as, (1) collection of specimens of medicinal plants on the market and dried leaves specimens of original plants, (2) straightening of Herbal Garden of Asuncion University, (3) research for the cultivation of Paraguayan medicinal plants, (4) detection of variation by electrophoresis, (5) plant collecting travel, (6) content of training at c/p's visit to Japan, (7) time of expert dispatching and the substance of guidance, and (8) others and the content of research in the future was determined. In addition, for the reference to straighten the Herbal Garden, the representative herb gardens in Japan were visited, i.e. Kyoto Herbal Garden, Pharmacognocny Laboratories, Central Research Division, Takeda Chemical Industries, Ltd., the Kyoto Botanical Garden, and Medicinal Plants Garden of Kyoto Pharmaceutical Univesity. As for the study, on the spot of herb collection, Dr. Isabel visited with us the Vegetables and Flowers Experiment Station of Nagano Prefecture at Kitamimaki in Nagano prefecture, as well as the raising farms of *Panax ginseng* C. A. Mayer, and *Swertia japonica* Mikano.

As stated above, as far as the botanical division of this project concerns, it is considered that the preparation for the cooperation of study has been completed for the present.

Table 1

PLANTAS MEDICINALES DEL PARAGUAY (Compradas del Mercado 4 )  
21 de mayo de 1985

1. Santa Lucía blanca (Refrescante)
2. Ceba caballo (Refrescante. Se machaca y toma en el agua)
3. Perdudilla (Refrescante. En agua fría)
4. Zarzaparrilla (Refrescante. En agua fría)
5. Cola de caballo (Para los riñones. En agua caliente)
6. Aguapé puruá (Para la inflamación del estómago. En agua caliente)
7. Cocú (Refrescante. En agua fría)
8. Typycha curatú (Para indigestiones)
9. Ñangapyry (Para adelgazar)
10. Capii cati (Refrescante)
11. Mbocaya-i rapo (Diuretico)
12. Batatilla (Refrescante)
13. Raíz de perejil\* (Abortivo)
14. Cedrón Paraguay (Para calmar los nervios)
15. Llantén (Raíz) (Remedio para todo. Caliente)
16. Menta-í\* (Para calmar los nervios)
17. Taropé (Refrescante - all part)
18. Tupasy camby (Refrescante)
19. Poleo-í (Remedio caliente en té o mate - abortivo)
20. Toronjil\* (Para el corazón)
21. Ñuaty pytá
22. Urusu caty (para echar lombrices - en decocción)
23. Verbena-í (Para dolor de garganta - en decocción)
24. Cerdon capii (Para calmar los nervios - té)
25. Raíz de hinojo (Para dolor de estómago. En agua caliente)
26. Tayuya (Abortivo. Se toma en tereré o mate)
27. Ysypo mil hombre (Abortivo y refrescante. En el mate) (Aumenta virilidad)
28. Malva rapo pire (Abortivo. Decocción o té)
29. Caña brava (Abortivo. Decocción o té)
30. Yagua rova (Abortivo. Se toma té o decocción)
31. Ruibalbo (Abortivo. Se toma té o decocción)
32. Charrua caa (Para el estómago, Para despertar el apetito)
33. Chicoria (Purgante. En té o decocción)
34. Pindo rapo (Abortivo. En té o decocción)
35. Para todo pire (Uso desconocido)
36. Usuru hee (Para catarro. En mate o té)
37. Guayacan corteza (Dolor de barriga. En té o decocción)

38. Ybyrá pytá piré (Para lavar heridas o problemas de la piel. Se cocina y-lava)
39. Yateí caa (Remedio caliente. En té o decocción)
40. Yaguareté caa (Para el estómago. En té o decocción) (Como depurativo)
41. Colaguala (Abortivo. En té o decocción o en mate)
42. Penicilina (Para limpiar heridas. Se hierve y lavar)
43. Doradilla (Abortivo. Té o decocción)
44. Flor de mamón macho (En forma de jarabe para la tos de los niños especialmente)
45. Cangorosa (Abortivo y para úlcera. Té o decocción)
46. Malva blanca (Para eliminar catarro. Té o decocción)
47. Yuruveva
48. Ambay (Para la tos, Catarro. Té o decocción)
49. Yerba de lucero (Para el estómago. Té o decocción)
50. Pata de buey (Para los riñones. En tereré o mate)
51. Yaguá rundy (Para la tos. Té o decocción)
52. Sauco (Para inflamación del estómago. Friccionar)
53. Alcanfor del campo
54. Yateí caá (Remedio refrescante. En tereré)
55. Barba de maíz (Avatí zogüé) (Para los riñones. En té o mate)
56. Sara morotí corteza (Para diabetes. Se machaca, se hierve y se toma como agua)
57. Mecho acá raíz (Para el corazón. Se machaca y se toma con agua fría)
58. Siete sangría (Para la presión. Con agua fría o en mate)
59. Para para-í (Para los riñones, rompe piedras. Con agua fría o caliente)
60. Isypo pere (Para el cáncer. Se machaca. En té o decocción)
61. Tapeçué (Problemas de estómago. Para lavar heridas se hierve)
62. Ybahai (Para diabetes. Se hierve y se toma 2-3 veces al día o como té)
63. Siempre viva (Para el corazón y calmar los nervios; Se hierve y se toma en mate)
64. Calabacita (Para diabetes, se hierve y toma como agua o en tereré)
65. Caaré (Antihelmítico. Se hierve y se toma en ayunas)
66. Chirca melosa (Diabetes. Se hierve y se toma como agua o té)
67. Kino kino (Para dolores reumáticos y para golpes. Se machaca y se hierve)
68. Capi-una (Para el riñón. En té o decocción)
69. Agrial (Para dolor de garganta. Se hace gárgara con agua fría)
70. Curupaymí (Para el reuma. Se toma en mate o tereré)
71. Yerba mata (Para el corazón. Se toma con agua fría)

Table 2

## LISTA DE PLANTAS CULTIVADAS POR ESQUEJES

Nombre vulgar	No de plantas cultivadas	Crecimiento (No)	Por ciento
1- Cambara	30	9	30.0%
2- Cangorosa	10	9	90.0%
3- Poleo	30	6	20.0%
4- Cocú	9	4	44.4%
5- Chirca melosa	30	12	40.0%
6- Ñangapyry	30	13	43.3%
7- Ambay	30	3	10.0%

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