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ROLE OF MEDICINAL PLANTS USED IN DIFFERENT DISEASE IN HILLY REGION

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SUBMITTED TO

**NEPAL HEALTH RESEARCH COUNCIL
RAMSAHAPATH, KATHMANDU**



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SUBMITTED BY

**DR. BHUWAN PAUDEL
October, 2003**



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Dr. Bhuwan Paudel

Principal Investigator

Executive Summary



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The project title "role of medicinal plants used in various disease in hilly region" attempts to explore the value of medicinal plants, their uses in different ailments and their effectiveness. The study is carried out to evaluate the role played by the medicinal plants in the health care system.

The study has been divided into different chapters. The first chapter deals with the introduction of the study. Second chapter deals with the literature review. Third chapter deals with the research design. The fourth deals with results obtained from research and the discussion over them in various factors like distance, economic status, educational status etc. The last chapters deal with the conclusion and recommendation.

The main source of information is the field surveys, which included structured questionnaire and field observation. A total of 100 samples household was selected including traditional healers. Questionnaire was asked to the head of family member of a family. The unstructured questionnaire was asked to some traditional healer to get more information. The respondent is selected randomly dividing ten from each VDC. The study was carried out in 10 different village of Baglung district having different geographical altitude and multi ethnic group and the principal investigator directly take part in the survey and acquired an information about the identification, uses and availability of the medicinal plants.

It is found that medicinal plants are the first levels of health care providers to majority of the population of study areas. Modern health service's coverage utilization rate is low therefore the trust and reliance on medicinal plants, is very high among the people particularly rural areas. Traditional Healers normally provide treatment or advice to every problem presented to them. The health service providers in the study were HP/SHP/PHC, ayurvedic center, local vaidya, Dhami Jhakri, private pharmacy etc. The traditional system of treatment consists of two main components which was usually followed by dhami jhakri rather than local vaidya. First part is the spiritual treatment where varieties of events take places after the diagnosis. The diagnosis of the problem is normally a bad spirit getting into a healthy body, or bad spirit living around the individual, family or house and there by causing problem to the individual or the whole family members. Treatment is based on nature of spirit, duration of influence etc and normally requires offering of clothes, sacrifice animal or birds (chicken, goat, pigeon etc) and regular or special worship to a particular god or deities. In this process, the major part is drums beating and

chanting Mantras. Second part of treatment is popular than first part in the study area. Which consists of providing herbal preparation with or without selective diet or food. Certain foods are restricted during the treatment. Some follow the both type of treatment too.

It is found that medicinal plant system is well within the rural economy and traditionally accepted by a people. They felt easier to use local herbs than to buy medicine as most of the medicinal plants they need not to buy. The public should be made aware about the importance of medicinal plants, their effectiveness, toxicity and their limitation in the context of treatment. There is a need to develop medicinal plant system as an integral part of the health service. The policy should be to lay particular stress on the production of drugs based on local herb.



Abbreviations

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VDC	Village Development Committee
SHP	Sub Health Post
PHC	Primary Health Center
HP	Health Center
HMG	His Majesty OF Government
WHO	World Health Organization
TH	Traditional Healers
TM	Traditional Medicine
FH	Faith Healers



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Introduction



1.1 Background

Man's fight against disease started with human civilization. From time immemorial herbal medicines have been used for the purpose of healing the sick in Nepal. The land topography of Nepal includes Tropical plains; temperate hills and snow capped high mountains. This is the reason why Nepal has been regarded as one of the richest country in the field of natural resources. Nepal is in the 25th position in the world and 11th position in Asia according to the availability of the natural gift. This small country possesses rare and valuable herbal drugs of plant origin.

Since the time antiquity these medicinal plants have provided a good opportunity to our ancestors to develop an indigenous system of medicine, this ayurvedic tradition has special significance in Nepal where vedic culture and tradition are recognized by the state.

Most of Nepal's populations live in villages and remote areas where traditional way of medicinal treatment is practiced. Even today, the Vaidyas and medicine men use local herbs for their health care. It is estimated that there are 40000 traditional healers possessing a wide range of medical knowledge. The native healers treat 75 percent of patients according to the ancient Ayurvedic system.

It is estimated that there are 250000 species of higher plants in the world but only less than 5% of them are scientifically investigated for their medical efficacy. In Nepal there are more than 1800 medicinal plants. Large number of Nepalese medicinal plants is not identified yet. In Nepal due to the geographical limitation and economic constraints modern health service are still not available to vast majority of population. More than 2/3rd of the total population rely on medicinal plant system. It is believed that study over the medicinal plants, local traditional healers and the health service in the village brings a positive role to deliver primary health service to the every corner of the country.

1.2 Statement of the problem

Nepal is a under developed country. The health status of Nepal is poor. Only minority of the population has access to the modern health service. The geographical structure of the country has made it difficult to supply modern medicine adequately to every corner. It is easy to bring allopathic medicine from foreign country to Katmandu, but very hard to distribute to remote area due to lack of transportation and other infrastructure. In such condition there is no other alternative except practices of traditional medicine. The government is planning to decentralize primary health service by opening Health Post, Sub Health Post and Primary Health Care Center at the village level which are mainly depend upon medicine imported from foreign country. None of the health manpower at these institutions have been trained or made aware about the possibilities of using local herb.

It is believed that more than 80 percent of the people in South Asia rely on herbal remedies as a principal means of preventing and curing illnesses, and several traditional medical systems are based on the use of plants. There are several advantages to such systems: the plants involved are readily available, are easy to transport, and do not spoil quickly. Remedies based on these plants often have minimal side effects, and the relatively high cost of synthetic medicines in developing countries like Nepal often makes traditional herbal medicines an affordable choice for the poor in these lands. The use of medicinal plants in different ailments is a part of a time-honored and time-tested culture that still intrigues people today. A culture that has successfully used nature to treat primary and complex ailments for over 3,000 years obviously has a contemporary relevance. In an age when toxic drugs are increasingly unwelcome and when thinking people are using viable alternatives our Nepalese medical heritage must be documented, saved and used.

In the last 10 years, exports of medicinal plants have trebled. But with most of these plants being taken from the wild, hundreds of species are now threatened with extinction because of over harvesting, destructive collection techniques, and conversion of habitats to crop-based agriculture.

In many tribal societies living particularly in remote rural areas of Nepal, indigenous plants are being largely utilized as an exclusive means of combating human as well as animal diseases. These medicinal plants, their products, and the traditional medicinal practice have been preserved as unwritten (oral) tribal folklore. There is no record of this unique empiric knowledge

about plants having curative properties which generally get passed on from one generation to another only verbally and many times kept secret. However, there is a growing threat on the use of medicinal plants, their products and the traditional medicinal practice as the deforestation and encroachment of people are rapidly leading to agriculture land and urbanization in the former jungle.

The utilization of medicinal plants is of prime importance in countries where traditional medicinal practice exists. In 1985, WHO estimated that as many as 80% of the world's people living in rural areas rely on herbal traditional medicine as their primary health care (Fransworth and Soejarto, 1991). In many developing countries the majority of the population depend on traditional remedies. This is partly due to poverty, but also because traditional systems are more culturally acceptable (Brown, 1994).

In Nepal, approximately 1800 species of wild plants are used in traditional medicinal practice and a majority of which awaits proper documentation. There are many unidentified medicinal plants. These plants are being used by traditional healer since antiquity but are not properly identified in international era. They need to be identified.

Owing to the wide spread illiteracy and ignorance in our country, various studies in recent year has shown the importance of ayurvedic system of medicine.

1.3 Rationale of the study

In our country modern health service are yet to reach the mass of rural people. As the more people live in rural areas, they could not access the modern health service due to the lack of the transportation facility, poverty and the lack of the manpower in the health service-providing center. The rural people mostly depend upon the agriculture. Most of the time they have to spend on farm. They have no time to seek to the health center. So, in such context medical plants, which are locally available, could be the good alternatives.

Nepal occupies the central portion of the 2400km. long Himalayan ranges. The topography of Nepal includes tropical plains, temperate hills and snowcapped high mountain peaks of alpine zone. This is the reason; the country possesses rare and valuable herbs drugs. We are in 11th number in Asia and 25th number in world according to the availability of the natural resources.

Nepal has a rich wealth of medical plants. Himalayan medicinal plants are well known for their purity and effectiveness, which possesses incomparable degree of the medicinal values. So, the medicinal plant practice requires be developed and promoted in the proper way. For government also, it would be difficult to replace such traditional services immediately by providing modern health service but rather it is suggested to find ways to collaborate with the benefit of the local people.

1.4 Objectives

General

To know the medicinal plants used as medicine in various diseases.

Specific

1. To know the role of medicinal plants used in the treatment of various disease
2. To know the methods of preparation of medicinal plants
3. To know the existing health care system in the community.
4. To know the existing situation of medicinal plants and recommend measures for preservation and cultivation of medically important plants.
5. To make the profile of medicinal plants use as medicine in different diseases.
6. To know the effectiveness of medicinal plants used in different diseases

Chapter 2

Literature review

Ayurveda and Traditional medicine or indigenous Knowledge has been using for centuries by indigenous and local communities under local laws, customs and tradition in this Himalayan Kingdom of Nepal. IT has been transmitted and evolved from generation to generation since time immemorial. We cannot imagine a situation in the field of health without the use of the medicinal plants. Allopathic medicines are still beyond the economic level of most Nepalese People. Health of more than eighty percent Nepalese is still depend on the knowledge of ayurveda and traditional healer, their technology and local herbs. ²

From time immemorial man has been using various plants to fight with disease. That plants were an important source of medicine in the olden days is evident from the origin of the terms like drugs (English) and aushadh (Sanskrit). The former comes from a French word *drogue* which means a dry herb and the latter from a Sanskrit word *Aushadhi* which means the entire plant kingdom (Bhide 1970) century. Plants were the main source of drugs for the local healers. Baidyas and Kaviraj in the villages, as well as the basic raw material for Ayurvedic, Homeopathic and even allopathic medicines. Even today about 25% of the prescribed drugs contain active principles obtained from higher plants. It is believed that nearly two thirds of the population in developing countries depends upon plants as source of medicine. ⁴

It is easy enough to explain the preponderance of traditional medicine in the under developed world, where as the WHO has admitted only 15% of population has access to modern western style health care services (Mills 1994). It is easy enough to explain the continued reliance on plant-derived drugs in countries like Nepal, India, Sri Lanka etc. In China more than 5000 species of plants out of 30.000 species of flowering plant are traded for their medicinal properties. ⁴

Chemical compound derived from plants can be used as now and profitable starting point for synthetic chemistry. The classical example is the use of diosgenin as the primary starting material for the synthesis of a majority of steroidal hormones used in medicine. ⁴

The Plants are an important source of medicine is evident from the fact that many groups of pharmacological agents contain one or more members of plant origin. In addition to their

medicinal value, Plant products are also useful as emulsifying agents, flavoring agents, coloring agents, preservatives, perfumes etc. ⁴

About 2,50, 000 species of higher plants are estimated to be present on earth, but less than 5% of them have been scientifically investigated for their medicinal efficacy (Fransworth & Bingel 1976). Higher plants are therefore, a large untapped reservoir waiting to be investigated. Yet, in response to a heart felt need, the real information on herbs has been slow incoming. While it is clear that plants are now seen as accessible and safer alternatives to synthetic drugs. ⁴

Nepal and its plant diversity

Nepal situated in central Himalayas is a country having peculiar diverse fauna & flora, lies between China on the north and India on the east, south and west. Its shape is long rectangular with eastern line shorter than on the west. It stands on latitude of 26:22 to 30:27 norths and its longitude 80:4 to 88:12 easts. The east-west length of the country is 800 km, parallel to the Himalayan axis and the average north-south width is 140 Km. Its total area is about 147,181 sq. km. Its altitude varies from 60-220 m in the south rising to 8,848 meter at the north. Within this small area the country has all possible land form features of the earth except the volcanic and coral islands and marine. The country has plain area in the south, hills and valleys in the middle and lofty Himalayas in the north. So, on the above facts we can say that this country has an interesting geography and also due to tremendous variation in altitude as well as climate with in a small distance of a few hundred kilometer. As a result, Nepal is botanically very rich. About 7000 species belongs to vascular plants and 4500 species of non vascular plants are reported in Nepal.

Medicinal plants of Nepal

About 20,000 species of plants are reported to be medicinal uses around the world. Pandey (1968) reported 70 species from terai, siwalik, Mahabharat and Himalaya. Malla & Shakya (1968) enumerated 287 species. Medicinal plants of Nepal (1968) enumerated 393 species along with their therapeutic uses. Manandhar (1980) illustrated 37 species. Malla & Shakya (1984) compiled a list of medicinal plants. Among them 202 are tropical, 252 sub-tropical 197 temperate, 101 sub-alpine, 29 alpine and 72 cultivated and exotic MAPs in our country. Tiwari & Joshi (1990) mentioned 300 species, which are commonly used in Ayurvedic preparation with their indications.

The first effort towards the compilation of medicinal plants of the country is probably the hand written herbal pharmacopoeia Shushruta Nighantu which was copied in Newari script in post Lichhivi period in seven century A.D. which covers 278 plants species with their sanskrit synonyms and uses. Chandra Nighantu compile in the 19th century is another historic hand written pharmacopoeia. It is written in ten volumes and comprises descriptions and illustration of 761 different plants and about 200 minerals. However, the earliest published work on medicinal ethno-botany of Nepal was that of Banergi (1955) who studies medicinal plants from east Nepal. Similarly the work of HMG (1970), Jest (1972), Dobermez (1976), Adhikari and Sakya (1977) are the earliest work dealing with medicinal plants of Nepal. Since 1980, extensive works have been conducted on medicinal plants, particularly on ethno-medical botany.

The recorded list of medicinal plants found in Nepal is 700 species constituting 10% of the flowering plants of Nepal flora (HMG/IUCN). The number of Medicinal & aromatic plants of Nepal is about 1463 (Sherstha & Tiwari 1997). The increasing numbers of medicinal plants is evidence that we are still not able to know the total number of species, which are used as medicine in our country. It is very difficult to know all of the medicinal plants of Nepal with their therapeutic uses at present.⁴ According to the ethno-botanical survey (2002/2003), the existing number of medicinal plants is more than 1800.

Over the last decade, the field of health care has witnessed some radical transitions. Globalization has radically altered lifestyle, and the dimensions of health care provision to meet the needs of those life style. In a borderless world, the citizen has a far wider range of choices available when considering health care options. One of the most marked shifts has been the increasing use of complimentary and alternative medicine (CAM) in developed nations. Although estimates differ, it is clear that the demand for and growth of alternative treatment has been phenomenal. Whereas in most developing nations, traditional indigenous (alternative) medical practices are being quickly superceded by orthodox medical systems. Currently, an ethnocentric perspective shapes debates on this controversial issue "Integrated medicine" is assumed to mean selectively adopting some aspect of complementary and alternative medicine (CAM) to supplement conventional treatment plans. From the position of developing nations, 'integrated medicine' should involve judiciously adopting aspects of conventional medicine into an existing indigenous medical framework. Both systems of medicine have strengths and weaknesses, and their utilization needs to be culturally, economically and socially pragmatic.

Traditional medicine in developing nation offers valuable and cost effective resources for public health. Only a minority of the population in these countries has access to or can afford modern medical treatments. The potential of indigenous treatment methods to improve public health is currently undervalued, which has negative consequences for the quality and equity of global health. In addition indigenous medical system can offer a rich source of information for alternative treatment in developed countries. If traditional medicine is not adequately integrated into policy frameworks for health care delivery in developing nations, the irreplaceable social capital accumulated over generations will be squandered.

Nepal has been regarded as one of the potent producers of medicinal plants that are abundantly found in Nepal Himalayas. Along with the richness of the medicinal and aromatic plants, the country is well known for its traditional knowledge on healing properties of medicinal plants and other utilization of bio products. In facts, from the very beginning of the vedic period rishis, munis and other native traditional practitioners and healers used to carry on their studies on the medicinal herbs in the Himalayan region, the abode of potent medicines. These have been well recorded in the vedas and samhitas written between 1600 to 4000 B.C. Moreover, some of these medicinal plants are even used in the modern medicine systems. Such traditional knowledge is in vogue in many parts including remote areas of Nepal that need urgent attention to keep their records in proper order.

The bio diversity in Nepal has always been a very significant component of livelihood to posses vast amount of its overall biological wealth and knowledge. Based on the information so far recorded, Nepal is ranked in 25th position in global context and in 11th position in the continental context of its bio diversity richness. Starting from around second century A.D. to now dealing with the medicinal plants, information on medicinal plants and medicinal practices in Nepal is widely scattered in a large number of publications. Furthermore, there are a number of works, which are still in the form of unpublished reports. So far, no efforts have been made to compile all the scattered information in one place. As a result of the popularity of Himalayan herbs and their associated indigenous knowledge, the number of people and national and international institutions seeking information on these plants is increasing very rapidly. Therefore, there is an urgent need to consolidate and organize all available information on medicinal plants of Nepal.

Chapter 3

Research Design

3.1 Study area

The study was done on Baglung district of Nepal. The study was carried for six months in ten different villages at different distances with respect to district headquarter. The villages having different altitude and climate are chosen. Baglung is a district, which is in a way to represent not only the shape of Nepal but also altitudinal and ethnic diversity of the country. Its altitude varies from 655m(Binamare) to 4690m(Phagune Dhuri). The villages are chosen which represent different altitude including highest and lowest altitude of the district. The average population of each village is about five thousand, the main castes living over these villages are Magars, Brahmins, Chhetris, Newars, Gurungs,

The villages in the study area lie at the farthest distance of about one hundred kilometers and the shortest distance being five kilometer from district headquarter. The selected villages are Narayansthan VDC, Amalachour VDC, Kushmi Sera VDC, Sarkuwa VDC, Rankhani VDC, Suntalachour VDC, Binamare VDC, Dhullu Baskot VDC, Burtibang VDC, Bobang VDC.

The villages are chosen where there is a traditional system of medicine is prevalent. These villages at different distances were selected to investigate the impact of modern health service on the use of traditional health service. The transportation facility is not yet reached in most of the part of district. Some village are so inaccessible that it takes more than 8 days to reach from the district headquarter or road facility area. However, due to this disadvantage or tragedy, tradition has been preserved in the large part of the district

The main occupation of the people of the study areas is agriculture. There are Primary Health Center, Health Posts as well as Sub-Health Posts without health workers most of the time. So, people usually prefer to do local treatment. There are about seven thousand households of different caste groups. Total population is altogether about thirty-five thousand of the ten villages of study area.

These villages are chosen for the study because:

- These villages are rich in medicinal plants. There are numbers of traditional healers and the people usually prefer medicinal plants for treatment.
- The researcher is well known and well accepted by the villagers and traditional practitioners because these VDCs are familiar to principal investigator.
- These VDCs are the villages where traditional belief and practice is prevailing most and heterogeneous population inhabits the villages.
- The principal investigator has a broad knowledge about the socio-economic, cultural and behavioral setting of those villages.

3.2 Study Design

The study was of descriptive with exploratory type. It was mainly based on qualitative type and some statistical tools also supported the result of the study.

3.3 Exclusion Criteria

The following criteria were used to exclude respondent from the study sample:

- The respondents who were not willing to answer the questionnaires
- Repeated house of the same family (having more than one house).

3.4 Sampling technique and procedure

Records of total number of house and house number in each ward of village were obtained from the concerned Village Development Committee Office. Random selection was done to choose the house by lottery method. Lottery was pulled for nine times to choose the household of the study area in a village. Questionnaire was asked to the household head of chosen house. At least one traditional healer from each village was selected by identifying the traditional healer where the respondents prefer to visit during the illness (Purposive selection). In this way, the required sample size (100 respondents) was formed selecting 10 respondents from each VDC (including at least one traditional healer).

3.5 Data collection method

The study is based mainly upon primary source of information. The data was collected by means of interview and observation. Records of household were collected by means of secondary source from VDC office.

By interviewing to the respondents, data were collected. Structured questionnaires were developed and were asked to the head of the family. The data was collected by means of unstructured questionnaires from some traditional healers, Vaidhyas, faith healers, Dhami and persons in the villages who know about medicinal plant. The observation was done to know the general procedure of herbal medicine regarding various diseases. In interview, information regarding Family socio-economic background, prevalence of common diseases, types and parts of herbal medicine used in various diseases, Visiting pattern of people to Health Institution, attitude of people towards herbal medicine was gathered. The present existing condition of medicinal plants used in different diseases was analyzed.

The principal investigator received a direct communication by himself talking to local people and practitioners for the study. A local people of each village assisted the principal investigator. Medicinal plants used as medicine by the healers/people for the treatment was collected and their local name was recorded. During the study, the principal investigator directly takes part in the study. The study was fully monitored and supervised by principal investigator.

3.6 Method of data analysis

- The collected data were edited at the end of each day
- If some incomplete or wrongly filled questionnaire was found, it was completed and corrected
- Coding was done when all necessary data had been collected
- All the quantitative data were entered in computer
- Some of the herbarium was prepared for the purpose of identification(in case of confusion). For the identification purpose of plant, consulted with expert of concerned field.
- Data analysis and interpretation was done in Kathmandu.
- Number of literature was reviewed.

3.7 Expected outcome of the research

Expected outcomes of result are:

- There may be number of medicinal plants being used in different diseases which may not be known yet.
- The parts, dose and effectiveness of plants being used in different diseases would be known.
- There may be new medicinal plants, which are not identified yet.
- The medicinal plants may seem to be more effective in some diseases than any other system.
- Medicinal plants seem to be cost effective.
- The study would be provided and opportunity to see the validity of herbal medicine used in different diseases.

Chapter 4

RESULTS AND DISCUSSION

4.1 Use of medicinal plants in the treatment of various diseases

People usually prefer to use medicinal plant, as a medicine in the treatment of different disease. The use of same medicinal plants differs with the different community and also differs with the geographical variation. The local name of same plants seems to be different with different ethnic group and with the different in geographical variation.

Medicinal plants are a first level of health care provider in a village. it is found that medicinal plant system is well within and traditionally accepted by a people. They feel easier to use local herbs than to buy medicine as most of the medicinal plants they need not to buy. People usually get medicinal plants locally, some may have to borrow from neighbor and few may have to buy from a market. Medicinal plants are mostly used by local vaidya. They prescribe the medicine usually after diagnosis. They believe that disease are of mainly two types Garma(hot) and Sardi(cold). Similar to the disease the medicine or food are of two types hot and cold. In cold disease they prescribe hot medicine and food and in hot disease they prescribe cold medicine. They have a special type of diagnostic tool and treatment procedure. One of the traditional healer has a wonderful diagnostic process of Jaundice (Hepatitis). He puts some urine of patient in the transparent pot in which he keeps 4-5 grains of rice. After some time he takes out the rice and examines how much it was stained. According to the concentration how much it was stained, he calculates the severity of disease. According to him in incurable disease it is very hard to make rice as of previous color (white) after washing hardly.

It was also found that Common prevalent disease are Gastritis(gano gola), joint pain, diarrhea, lower abdominal pain(female), cut injury, cough and cold. Some of the medicinal plants like tite, Jadelo, Bhotekhayar, Raktamula, Raktatala could not be identified. These plants may be the new medicinal plants. They need to be further investigated.

4.1.1 Description of plants used as medicine

A total of 160 different medicinal plants (see appendix) is found to be used by respondents in the treatment of various disease out of these plants some are herbs, some are shrubs, climbers and some are tree. People use single plant or mixed different plants as a medicine in a single disease. It is also found that a single plant is used in different disease Herbs were the most common medicinal plants. The main medicinal plants in the study area are satuwa, Gurgo, Asuro, dankerno, haledo, sipligan , Aabijalo etc.

4.1.2 Parts of plants used as medicine

The different parts of plants used as medicine as per the respondents' response are as follows

- whole part of the plant (usually in herbs)
- leaves, flowers, fruits of herbs ,shrubs and tree
- stem, stem bark, root, root bark, latex, leaf pulp
- Rhizome, tuber, bulb

The study showed that the respondent used different parts of the same plants for different disease and mixture of several parts the same plants or different plants for different disease. It is also found that in some case only one part of the plants has medicinal value.

4.1.3 Methods of preparation of medicinal plant

There is no a single rule for the preparation of medicinal plants. It somehow differs from respondents to respondents. Method of preparation of medicinal plants depends upon in which form it is used. Usually the different parts of medicinal plants were made into paste, juice, powder, decoction form .In most of the cases people uses fresh plant as a medicine. Single plant or a part of the plants was also found to be taken as a whole. The dose of the plants depends upon the form how it was used. The dose differs with different plants. It was found that fresh plant was more effective than dry or old plants.

(A) Paste form

The paste form of the medicinal plants included whole part of herb or some part of shrub, herbs or tree. Sometimes dry part of medicinal plant is changed into paste form also. This form is

used internally and externally as a treatment depending upon the type of disease. For example the leaf paste of ghiukumari (*Aloe vera*), haledo(*curcuma longa*) are used as externally. Dubo, Amala are used both internally and externally. Root paste of *tite* is used in children internally in the treatment of Pertusis while Potato paste in burn is used externally. Paste form of Ghodtapre in urinary problem is taken with sugar internally. Paste is mostly indicated in skin disease.

(B) Powder form

The powder form is made from roots, fruits, flower, bark, leaf etc of the medicinal plants. First of all, these whole plants or parts are dried under sunlight and stored. These parts then made into powder form. The powder usually is mixed with sugar or salt. Patients take powder medicine usually with hot water or honey. The root powder of satuwa (*paris polyphyta*) is used in fresh wound externally and in some allergic condition it is taken internally. The flower powder of Laligurans is used in choking, similarly fruit powder of Amala is used in gastritis. The bark powder of neem is used in fever.

(c) Juice form

There are two kind of juice form: extracted and milky which are usually made up of leaves and bark of medicinal plants. The juice is usually extracted from pressing the leaves and filtered through muslin cloth. The leaf juice can be used internally and externally. Some medicinal plants contains milky juice like Aank(*calotropis procera*), Siudi, Khanyu etc. The leaf juice of Aank is used externally in skin diseases. Similarly the juice obtained from Dhursul is effective in eye disease. Juice obtained from aabijalo is effective in sinusitis. Kyamun bark juice internally is effective in snake-bite.

(d) Decoction form

This form of medicine is made from the extract of crude drug by boiling it in water. Decoction includes the part of medicinal plants such as leaf, stem, fruit, flower and rhizome. Among these, leaf decoction is very common. For example leaf decoction of Neem is used in skin disease and Parijat in fever. Sometime cold infusion of medicinal plant is also used.

Besides, different parts of plants mixing together forming different form are also used in different disease. For example, Fruit of Harro, barro and Amala mixing in a equal amount to

form a renowned medicine Triphala Churna is widely used in constipation. Usually traditional healer mixes the different medicinal plant in treatment procedure but when local people use medicinal plant by themselves they prefer to use single plants.

4.1.4 Expressed effects of medicinal plants

It is indeed very difficult to examine the effect of medicinal plants in healing disease, because it can not be isolated from the modern medicine since most of the rural people have used both service, simultaneously first medicinal plant and then modern medicine or vice versa. It is known that local people have not fully depend upon the modern medicine for treatment.

At the beginning, villagers use locally available plants as medicine for the treatment of disease or use them according to the suggestion given by the local Vaidhya or local medical practitioners. If the diseases get serious and when they felt not effective of using medicinal plants, they then visit modern medical service providers or practitioners like compouderers, AHW, HA, or local pharmacy. In most of such cases they tend to use all devices, traditional and modern health services. If the disease would not cure from the modern medicine they then again seek to the renowned traditional healers of their village or nearby the another village. So it is wise to say people sometime used medicinal plants in a first stage of disease and sometime in a last stage of disease. There are the cases in which medicinal plants are effective where modern medicine was ineffective.

The clinical experiment basis is the direct method of examining the degree of effects of particular medicinal plants on the particular disease. However in the absence of such methods, one way to examine the effects of medicinal plants on healing the disease is the expressed effect of the medicinal plants as respondents or by the medicinal plant practitioners or the local people who used them. Such people have closely observed the medicinal plants. Their explanation is far more near to the fact than other general people who have just heard about medicinal plant and used as per saying by others.

Some stories about the effects of medicinal plants are as follows:

- A resident of Binamare VDC, about 25 kilometer south of district headquarter Baglung named Subash age 24 years was suffered from corneal ulcer (Phulo Parnu). Ten years before his one eye-sight was lost due to foreign body in the eye. Patient was brought to Pokhara (Himalayan Eye Hospital). He was checked and got a medicine for a month but there was no improvement. After one year his father brought his to examine at the Eye Hospital in India (Deharadun). He was treated there and use lot of eye drops and oral medicine but the condition remained same, there was no improvement at all. He then returned to his village. According to the advice of his family and neighbors he then consulted a local Vaidhya of same village. The local Vaidhya adviced to put the leaf juice of *Dhursul*, two drops 2 to 3 times a day in a affected eye. According to patient and local Vaidhya it was the first case whom local Vaidhya advised to put juice. Earlier local Vaidhya had done a same type of treatment in cattle and got the satisfactory results.

The local Vaidhya had also advised him that to put the juice of *Dhursul* leaf in eye would very painful and burning. But the condition of eye would improve to some extent. Then the patient was agreed and he did so. After two days the corneal ulcer starts to improve slowly and the spot gradually disappears. After a week patient retains the eye sight. He continued to use for next week. Then the corneal ulcer was completely healed. Now he has a good eye sight, there is no any complication or difficulties. He lives in a village as a healthy person.

Another story is about the effects of *Sisno* in the cut injuries resulted from dog-bite.

- A resident of Burtibang about 80 kilometer far from Baglung bazaar, a boy of 10 years old was bitten by dog around seven years back. The dog had bite on the left ear. The pinna of the left ear was almost about to detached. Bleeding was continued. His father saw a case there was a hanging of pinna. According to him, it was almost in a way to drop. His father tried to take off the pinna but he could not. Then he brought his son to the local Vaidhya. Vaidhya made a paste of *Sisno* leaf. He used a young leaf (*Munta*) of *Sisno*. He then applied paste around a cut area by joining skin together manually. After a week the wound heal completely. The paste was gradually removed itself. The pinna of the ear was all right after the treatment.

4.2 Factors of using medicinal plants/existing health care system in the community

The use of medicinal plants has been analyzed in relation to different factors such as education status, economic status, age group and according to health service providers.

4.2.1 Educational status

Visiting pattern of respondents according to the level of education

Education Level	No of person	Visit for treatment					
		SHP/HP/PHC	Ayurvedic center	Dhami Jhankri	Self	Local Vaidhya	Others
Illiterate	19	7	3	4	11	12	2
Literate	15	8	4	2	7	7	3
1 to 5	14	9	2	1	3	6	3
5 to 8	25	18	7	2	10	7	6
SLC	16	8	8	0	5	3	7
PCL	7	4	4	0	1	1	4
Bachelor & +	4	2	3	0	0	0	2
Total	100	56	31	9	37	36	27

Table 1

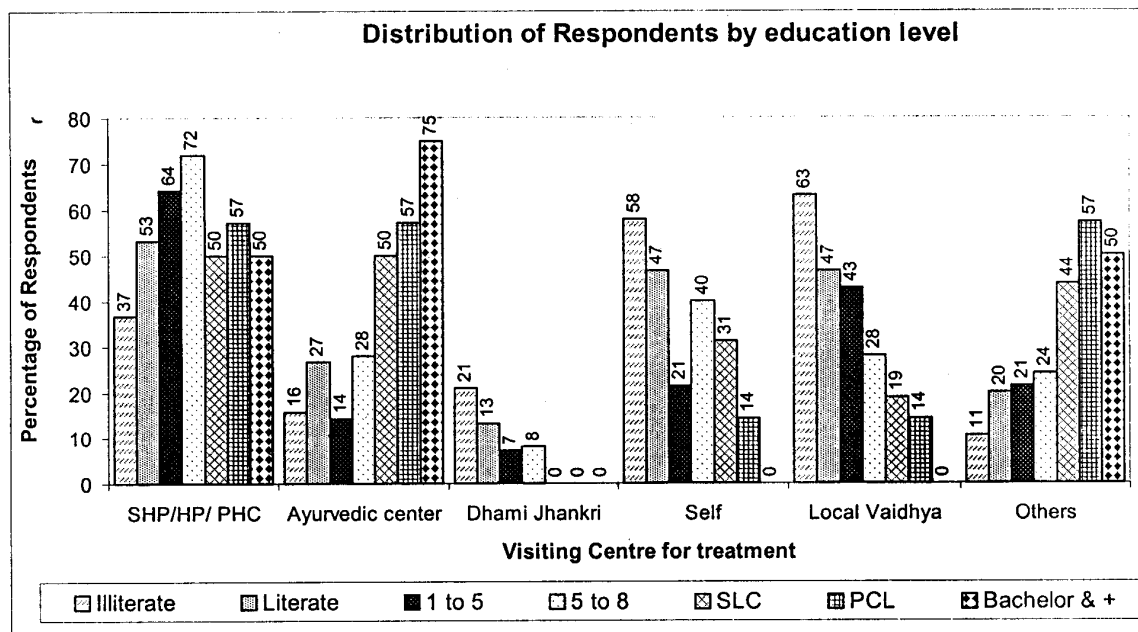


Chart 1

There was some variation in the use of medicinal plant service for the treatment of various diseases according to the education status of the household. Lower the educational status more was the use of medicinal plants for the treatment but the more educated people have positive attitudes towards the use of medicinal plants

4.2.2 Comparative study of use of medicinal plant and modern health service by any means

Education Level	No of person	Use medicinal plant	Use modern medicine
Illiterate	19	19	16
Literate	15	15	14
1 to 5	14	14	14
5 to 8	25	25	24
SLC	16	16	15
PCL	7	7	7
Bachelor & +	4	4	4
Total	100	100	94

Table 2

The service providers in the study area are SHP/HP/PHC, Ayurvedic center, dhامي jhakri, local vaidya, others (private pharmacy, Clinics etc) and some do the self treatment by medicinal plants or by modern medicine. Among them least popular were Dhامي and Jhakri, and most popular is Health post/SHP/PHC.

Service from Dhامي, jhakri, local vaidya, ayurvedic center and self-medication mainly comprises the treatment of medicinal plants. While services from SHP/HP/PHC comprises the use of modern medicine. People use modern medicine by self and from the others categories. It is found that every respondent in the study area use medicinal plants by any means. Use of medicinal plants is found to be more popular than the use of modern medicine.

According to the study, it was found all the respondents have used medicinal plants by any means during their life, but 6 respondent were found who do not have used modern medicine during their life.

4.2.3 Economic status

Visiting pattern of respondents according to economic status

Economic Status	No of person	Visit for treatment					
		SHP/HP/PHC	Ayurvedic	Dhami Jhankri	Self	Local Vaidhya	Others
Low	56	30	19	5	19	23	13
Middle	37	21	8	3	16	11	11
High	7	5	4	1	2	2	3
Total	100	56	31	9	37	36	27

Table 3

One of the measure of economic status of the household considered in this study was, the total income earned by the respondent by various means (agriculture, service, business). However it was difficult since most rural household do not take record of their income or even could not estimate their gross income. The present measure is used to get haunch of the household income level. Three levels of economic status have been identified.

- Low level group: Total earning was not enough for fulfill the basic needs (food, shelter and cloth)
- Middle level group: Total earning was just enough for fulfill the basic needs (food, shelter and cloth)
- High level group: Total earning was enough for fulfill the basic needs (food, shelter and cloth) and extra earning.

Other information to support this classification includes occupation types, land, family members etc. Lower the economic status more was the use of medicinal plants but lower economic status group rely on traditional healers, Dhami Jhankri than Ayurvedic center. It is obvious to say that Dhami Jahankri, Local Vaidhya and self-medication comprises the use of medicinal plants. High economic group use medicinal plants as a treatment but they believe more in Ayurvedic center than local Vaidhyas.

4.2.4 Age group

Visiting pattern of respondents according to the age group

Age Interval	No of person	Visit for treatment					
		SHP/H P/ PHC	Ayurved Center	Dhami Jhankri	Self	Local Vaidhya	Others
Below 30 yrs	12	9	3	0	4	3	4
30 to 40 yrs	17	12	5	1	7	5	8
40 to 50 yrs	26	15	9	2	10	9	9
50 to 60 yrs	21	10	6	3	7	8	3
60 to 70 yrs	14	6	4	2	5	6	2
70 and above	10	4	4	1	4	5	1
Total	100	56	31	9	37	36	27

Table 4

There is a variation in use of medicinal plant service according age group. The number of respondents using medicinal plants increases as the age group increases. This indicates that the importance and belief on medicinal plants is more on old persons.

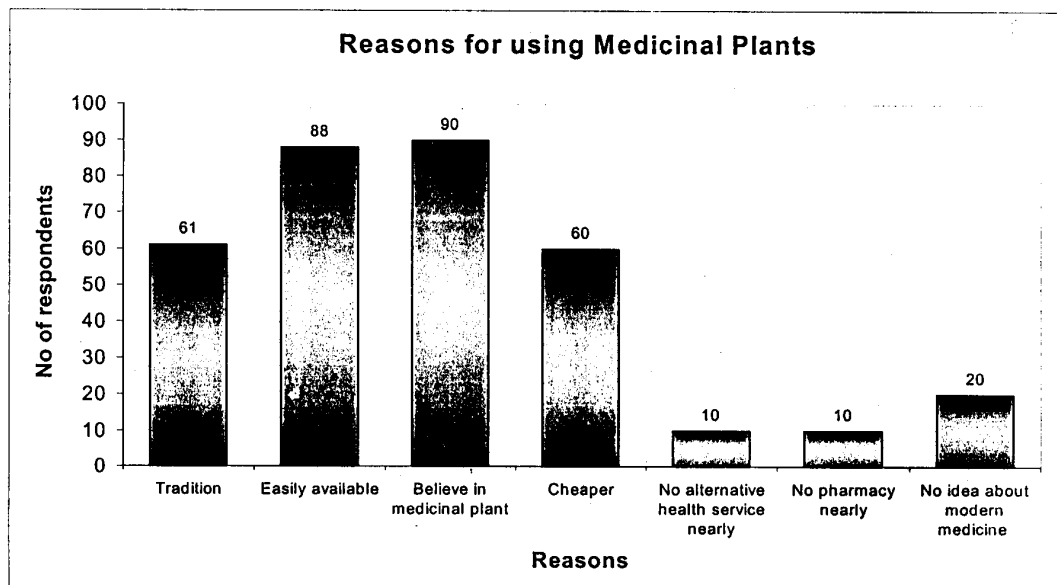
4.3 Reasons of use of the medicinal plant

Reason	No of respondent
Tradition	61
Easily available	88
Believe in medicinal p'ant	90
Cheaper	60
No alternative health service nearly	10
No pharmacy nearby	10
No idea about modern medicine	20

Table 5

Above table Reveals that people preferred to use medicinal plant service than the modern health service because people have more belief on medicinal plant. Medicinal plants are easily available. 61 respondent use medicinal plant because of the tradition, which was the one cause among other causes. 10 respondent stated the cause of no pharmacy nearby and having no idea of

modern medicine. Indeed, there was more than one cause why respondent uses medicinal plants. People use medicinal plant because they need not to buy them and are locally available. Medicinal plants are comparatively safer. Some people hesitate to go in government health center because personnel of the government health center were mostly from outside the areas and not familiar to the people so they want to visit local practitioner who mostly practices medicinal plant system and were familiar to most of the population.



4.4 Existing situation of medicinal plants

Out of 100 respondents 93 respondents said that the numbers of medicinal plants are decreasing. 7 respondents said that the number of medicinal plants is as before. In fact due to the unscientific collection procedure and lack of care the number is declining. Plants which are found abundantly few years back are now going to be endangered. As these plants being taken from the wild, numbers of species are now threatened with extinction because of over harvesting, destructive collection techniques, and conversion of habitats to crop-based agriculture. For instance, the small coniferous Himalayan yew (*Taxus baccata*) has recently become a heavily traded species. It is avidly sought because it contains taxol, used to treat ovarian Cancer. Large quantities of this plant are collected and exported annually, although its harvesting is illegal in most of the South Asian countries.

Chapter 5

Conclusion and recommendation

Conclusion

Health service is effective if they are affordable by the people. The success of health service depends upon the various factors. The health service would not be sustained if it totally depends upon foreign resources; it is found that medicinal plant system is well within the rural economy and traditionally accepted by a people. They felt easier to use local herbs than to buy medicine as most of the medicinal plants they need not to buy. The public should be made aware about the importance of medicinal plants, their effectiveness, toxicity and their limitation in the context of treatment. There is a need to develop medicinal plant system as an integral part of the health service. The policy should be to lay particular stress on the production of drugs based on local herb.

Recommendation

- **Urgent need of identification and preservation of our resource.** Knowledge about medicinal plants and disease should be gathered from every part of the country otherwise it would be extinct in near future
- **Orientation about the usefulness of medicinal plants should be given to all the health workers.** If such programs are carried, it could greatly help in the health care at the basic level equivalent to the **HERBAL FIRST AID**. and the dependency on the import drugs would slow down
- **need to integrate medicinal plant system** in providing primary health care service
- **Public awareness:** The public should be made aware about the importance of medicinal plants, their effectiveness, toxicity and their limitation in the context of treatment.
- Government should **encourage the medicinal plant practitioner** by giving them essential training in the knowledge of better use and management of different disease. More thought needs to be given to utilizing available traditional health resources more effectively. To this end, the health personnel of traditional plant medicines should also be considered as technical resource, as the service they provide meets the needs of the people.
- Some **basic course of medicinal plant** should be included in the course of modern health service.

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Appendix

LOCAL NAME	BOTANICAL NAME	NAME OF DISEASE	METHOD of use
1. Aalaichi	Amomum subulatum	cough, indigestion, vomit,	Fruit used as spices
2. Aamriso	Thysanoxena maxima	Rhinitis, sinusitis wound	Flower used as nash root paste with oil is applied
3. Aapa	Magnifera indica	Diarrhoea	Bark is used as decoction.
4. Aamala	Phyllanthus emblica	Gastritis, cough and cold Burn	fruit (used as powder) dried leaf powder
5. Aabijalo	Clematis buehananiana	toothache Sinusitis	paste (leaf) locally applied leaf juice sniffed through each nostril
6. Aatis	Aconitum heterophyllum	Toxicity, indigestion	root , specially white root
7. Angeri	Lyonia ovalifolia	Skin disease, pediculosis	leaf paste applied in skin
8. Aakasbeli	Cuscuta reflexa	liver disease , skin disease	Leaf (high dose) fatal to animals whole plant in powder, juice or decoction form local application
9. Asuro	Adhatoda vasica	cough and cold, asthma, malarial fever, haemostatic	leaf decoction with salt, black pepper and Haledo leaf and flower decoction
10. Ukhu	Saccharum officinarum	Jaundice	juice is used
11. Aamba	Psidium guajava	Diarrhoea	bark , leaf are used
12. Aduwa	Zinziber officinale	Flatulence	Rhizome is used
13. Aangur	Vitis vinifera	Jaundice	Fruit as a whole.
14. Aak	Calotropis prosera	amoebiasis , cough and cold skin disease sinusitis	Root bark flower Latex externally on infected area milky juice used as nash
15. Indrayani	Citrullus colisyntsis	urinary disease, pain abdomen	immature leaf and bud in juice or in decoction form
16. Aaiselu	Rubus ellipticus	haemostatic Pneumonia, snake bite	fruit , flower or whole plant can be used locally Root juice leaf paste locally
17. Kalniuri	Diplazium stoliczkae	diarrhoea and dysentery	whole plant
18. Kachur	Curcuma aromatica	Gano, gola, puerperal diseases	Expressed juice of Root and Rhizome
19. Katahar	Artocarpus heterophyllum	puerperal disease Mastitis	Ripe fruit is used
20. Kyamun	Careya arborea	pyorrhea, mouth ulcer Sinusitis, fever snake bite	decoction of bark and fruit used to gargle juice of bark taken orally
21. Kaphal/Hade kaphal	Myrica esculenta	wound fever, distension of abdomen snake and scorpion bite	barks juice stops bleeding bark and fruit bark juice(local or systemic)

22. Kakadasringi	<i>Pisticia integerrima</i>	diarrhea, cough child disease. snake and scorpion bite	Gall is used Gall is used
23. Kera	<i>Musa paradisiacal</i>	Earache	Externally in ear (2-3 drops, 3-4 times a day)
24. Kakoli	<i>fritetillaria cirrhosa</i>	asthma and cough	Rhizome in powder or in decoction form
25. Kagati ghans	<i>Cymbopogon jwarankusa</i>	Mouth ulcer	leaf is dried and made into decoction
26. Kans	<i>Saccharum spontaneum</i>	urinary calculi and dysuria	root is used
27. Kimbu	<i>Morus alba</i>	worm infestation	bark and root Juice
28. Kaphi	<i>Coffea arabica</i>	dental caries	Gargle
29. Koiralo	<i>Bauhania variegata</i>	Joint pain, swelling	leaf, stem bark as decoction
30. Kutki	<i>Picoriza scrophulia</i>	liver disease, Fever, malaria, Indigestion	decoction of root and rhizome
31. Kurilo	<i>Asparagus racemosus</i>	Gastritis, dudhachhya Diarrhoea, dysentery	root powder, or juice decoction of root
32. Kantakari	<i>Solanum xanthocarpum</i>	cough, fever, asthma worm infestation sexual problem, infertility skin disease	Whole plant can be used fruit is more better local or systemic
33. Kurkure jhar	<i>Equisetia debile</i>	Urinary problem (calculi) Frequent micturition , venereal disease (gonorrhoea)	whole plant in juice decoction or in powder form local or systemic
34. Kalo Haledo	<i>Curcuma longa</i>	wound, skin disease menorrhagia	local application of paste rhizome is used
35. Kadelude	<i>Amaranthus spinosus</i>	Menorrhagia, dys menorrhagia dudhachhya Burning micturition	rhizome, root or whole leaf (cold infusion) with <i>emblica officinalis</i>
36. Ketuki	<i>Agave americana</i>	Worm infestation	Root powder
37. Kharsu	<i>Quercus semicarpifolia</i>	rheumatological disorder, bodyache	latex is used as tea
38. Khannu	<i>Ficus semicordata</i>	paitik vikar Prolonged labour	root juice paste of newly coming leaf if applied on Lower abdomen and in genital region Enhance labour
39. Khote salla	<i>Pinus roxburghii</i>	worm infestation, bodyache urinary and uterine disease skin disease sexual problem	latex is used stimulates sexual organs of male and female
40. Gahat	<i>Dolichos biflorus</i>	urinary calculi	grains mixed in water and taken
41. Gineri	<i>Premna mucronata</i>	joint disease	leaf and root bark in powder or in decoction form
42. Gurgolahara	<i>Tinospora cordifolia</i>	gastritis, dysuria, asthma, DM skin disease	bark, leaf and root can be used as hot or Cold infusion washed locally by cold infusion also

43. Golmarich	<i>Piper nigrum</i>	skin disease toothache	Paste is used
44. Golkakro	<i>Coccinia cordifolia</i>	Lu lagnu	powder and decoction for gargle. Root juice or fruit mixed with water
45. Ghodtapre	<i>Centella asiatica</i>	Insomenia, pneumonia, mental retardation ,anorexia skin diseases, gastritis, liver diseases	Whole plant can be used in various form like juice, decoction, locally applied on affected area
46. Ghiukumari	<i>Aloe vera</i>	Burn abdominal pain, liver disease dysmenorrhagia, headache,	leaf pulp locally applied leaf pulp (juice) mixed with sugar
47. Chameli	<i>Jasminum officinale</i>	Earache,ottorrhoea	leaf juice mixed with oil and used locally
48. Chiuri	<i>Basia butyracea</i>	Cracked heal & palm	Ghee locally applied
49. Chiraito	<i>Swertia chiraytia</i>	Limb pain Fever, indigestion, bodyache Asthma, weakness, Jaundice, labour pain	Massage by ghee Whole part of plant is used in the form of decoction or in juice form
50. Chakramrada	<i>Cassia tora</i>	Skin disease	Leaf and seed are made in a paste form and applied
51. Chariamilo	<i>Oxalis corniculata</i>	Fever, indigestion, flatulence	leaf and rhizomes in powder or in decoction form
52. Chutro	<i>Berberis aristata</i>	Jaundice, Malarial fever, dysentary Syphilis & blood disorder Leucorrhoea, Menorrhagia Conjunctivitis	Root, stem or fruit used as powder juice or in decoction form in decoction form Fine piece of root or stem is boiled so that ¾ get evaporated remaining is filtered and mixed with cows or goat milk and boiled to get thick solution and applied in eye lids Fine piece of plant (stem, root) mixed with rice & taken as a food root in powder or in decoction form
53. Padamchal	<i>Rheum emodi</i>	Bodyache, Cough, cold, liver disease	juice from stem is installed in eye
54. Jadelo		foreign body (eye)	
55. Jatamasi	<i>Nardostachys jatamamsi</i>	Skin disease, hair disease Sleeplessness, Cough & Chest pain, Mental diseases, hypertension	paste is applied Rhizomes & root is used
56. Jethimadhu	<i>Glycyrrhiza glabra</i>	Gastritis, frequent micturation Eye disease, skin disease	Rhizomes & root powder Local application (also)
57. Jamane Mandro	<i>Mahonia napaulensis</i>	Eye strain, Gastritis, Worm infestation, Diarrhoea, dysentery	Stem powder kept in eye Powder of fruit or bark mixed with water taken orally
58. Jwano	<i>Trapa hispinosa</i>	puerperal disease	seed used as decoction. enhance lactation, promotes involution
59. Jhyau	<i>Permelia nepalensis</i>	Gum disease, Thorat disease Skin disease	Whole plant can be used in paste form locally
60. Tarbare	<i>Macaranga postulata</i>	worm infestation	half seed mixed with water and given
61. Titepati	<i>Antemesia vulgaris</i>	Fever Skin disease	decoction of whole plant locally applied with cows urine
62. Tite	<i>Swertia alata</i>	fever and pneumonia	root powder mixed with water

63. Timur	<i>Zanthoxylum armatum</i>	Anorexia, foul smelling of mouth worm infestation, bodyache indigestion, blood impurity	fruit is used as spices
64. Tite karela	<i>Momordica muricata</i>	Diabetes, dysentery, pyorrhoea	Fruit is used in different form
65. Tite Uney		wound, cut wound, Sprain and fractured,	root and leaf juice locally applied
66. Til	<i>Sesamum indicum</i>	Diabetes mellitus	Seed
67. Tulasi	<i>Ocimum sanctum</i>	cough and cold, fever	whole plant is used as powder or in juice form
68. Tejpat	<i>Cinnamomum tamala</i>	pneumonia in children scabies, piles heart and liver disease diarrhoea, limb pain flatulence	juice with honey locally applied leaf and bark is used in powder form and taken orally
69. Dadim	<i>Punica granatum</i>	worm infestation	root bark powder in empty stomach
70. Dhaniya	<i>Coriandrum sativum</i>	epistaxis	leaf juice on affected nostril
71. Dalchini	<i>Cinnamomum xelanicum</i>	Syphilis tongue paralysis nausea, vomiting (pregnancy) scorpion bite joint disease	bark, root and leaf is used oil locally stem bark leaf rubbed in affected area
72. Dudhe jhar	<i>Euphorbia thymifolia</i>	skin disease (wart) insect bite	leaf in powder form is used milky secretion from plant applied around
73. Dudhe laharo	<i>Hemidesmus indicus</i>	skin disease, paitik disorder Conjunctivitis Rakta asudhhi	whole plant can be used locally locally or decoction of root milky secretion locally on eye
74. Dansinki	<i>Dryopteris species</i>	flatulence, indigestion Gastritis, dysentery	decoction leaf juice or leave as a whole can be chewed
75. Dhasingrer	<i>Gaultheria fragrantissima</i>	limb pain, headache	leaf juice used to massage
76. Dhursul	<i>colebrookea oppositifolia</i>	foreign body (eye)	leaf juice in eye 2-3 times
77. Dhaturu	<i>Datura stramonium</i>	enuresis, gall stone	leaf, flower and seed used as powder or in Juice form
78. Dubo	<i>Cynodon dactylon</i>	Pediculosis, skin disease Diarrhea, dysentery, piles	paste or juice locally applied Whole plant in juice form
79. Dhairao	<i>Woodfordia fruticosa</i>	burning sensation of limbs Menstrual and puerperal disorder Bleeding wound	leaf, root, flower are used in powder (flower is better) flower powder when locally applied acts as haemostatic locally applied
80. Dai kamalo	<i>Callicarpa macrophylla</i>	skin disease, headache Fever	flower used as powder. Decoction of stem bark.
81. Dumri	<i>Ficus glomerata</i>	Diarrhoea	
82. Neem	<i>Azadirachta indica</i>	Skin disease Worm infestation Fracture Labor pain Fever, joint disease, cough Conjunctivitis	leave and bark decoction used to wash leaf juice bark paste is applied seed powder decoction of bark, leaf flower and leaf juice

83. Nirmasi	<i>Delphinium denudatum</i>	fever, gastritis, toxicity	root rubbed in a glass of water and given
84. Nagbeli	<i>Lycopodium clavatum</i>	Abscess	reduce pus formation
85. Nagkeshar	<i>Mesua ferrea</i>	Anuria diarrhoea, dysentery	helps in urine formation flower powder is used
86. Nigalo	<i>Arundinaria falcata</i>	retention of urine	root juice
87. Bhui amala	<i>Phyllanthus niruri</i>	Jaundice	fruit or whole plants juice or chewed with water
88. Panch ayounle	<i>Dactylorhiza hatagiera</i>	cough, rejuvenator, aphrodisiac	tuber is used
89. Pipala	<i>Piper longum</i>	Bleeding wound fever, constipation, Respiratory	root powder helps to control bleeding
90. Pipal	<i>Ficus religiosa</i>	Disease, Jaundice, Cough, asthma	Root & fruits are in powder or mixed with other plant
91. Parbal	<i>Trichosanthes dioica</i>	abortion Whooping cough Worm infestation	fruit powder stops recurrency stem bark decoction fruit is used
92. Parijat	<i>Erythrina variegata</i>	Ear disease	Leaf juice
93. Pasanbed	<i>Bergenia Ligulata</i>	Conjunctivitis	leaf paste
94. Pangra	<i>Eutoda phasesioides</i>	Urinary Calculi	Male plant is used in powder
95. Pudina, patina	<i>Mentha spicata</i>	Dysmenorrhagia	on decoction form
96. Badahar	<i>Artocarpus lakoocha</i>	Anorexia, Cough	Leaf juice 2 to 3 times a day
97. Banmara	<i>Eupatorium odoratum</i>	Diarrhoea	Fruit is used
98. Bakaino	<i>Melia azedarech</i>	Bleeding, Wound	Leaf juice locally
99. Barro	<i>Terminila belerica</i>	headache wound Toxicity, Indigestion, Cough, Worm Infestation	paste of leaf and flower locally juice of leaf Helps to vomit toxin Fruit or bark powder is used
100. Bayar	<i>Zizyphus mauritiana</i>	Eye disease Anorexia	Filtered water of powder locally Fruit is used
101. Batulpate	<i>Cissampelos pareira</i>	Fever, Diarrhoea	Root powder with water
102. Bansalochana	<i>Bambusa arundinaceae</i>	Burning micturition cough and cold	powder is used with honey
103. Bankapas	<i>Thespesia lampas</i>	sprain, strain, trauma	root is used as juice or powder
104. Bakhrikane	<i>Inula cappa</i>		
105. Bish	<i>Aconitum spicatum</i>	Joint diseases	Root & tuber in low dose
106. Buki phool	<i>Anaphalis bhsua</i>	Bleeding wound, Menstrual disorder	Leaf juice locally Leaf juice when taken orally
107. Bojha	<i>Acorus calamus</i>	Cough, Mental Retd ⁿ , Sore throat	control excessive bleed Tuber and root are used
108. Bhakimlo	<i>Rhus parviflora</i>	Antidote Dysentery Abdominal pain, Paralysis	Chewed Helps to vomit Fruit powder

109. Bhote Khayar			
110. Bhorlo	<i>Bauhania vahlii</i>	Fever	Decoction of leaf
111. Bar	<i>Ficus bengalensis</i>	menorrhagia	decoction of stem bark
112. Bhringiraj	<i>Eclipta prostrata</i>	Fever, Jaundice, dysmenorrhoea	Leaf juice
113. Bhyakur	<i>Dioscorea deltoidea</i>	Pediculosis	Root & tuber juice or decoction helps to kill
114. Brihati	<i>Solanum indicum</i>	cough	root and fruit are effective
115. Bhain Amala	<i>Phyllanthus urinaria</i>	Jaundice	whole plant is used
116. Bhut kesha	<i>Selinum tenuifolium</i>	mental disease	rhizome used as powder
117. Makar kanchi	<i>Begonia picta</i>	Wound	Paste locally
118. Manjitho	<i>Rubia cordifolia</i>	Scorpion bite, Snake bite, Chronic wound, Skin disease, Paralysis	Stem, root, flower & fruit decoction form or in powder form
119. Musali	<i>Asparagus adscendens</i>	sexual weakness	rhizome
120. Mayal	<i>Pyrus pashia</i>	abscess, wound	paste locally applied
121. Marthi	<i>Rabdosia rugosa</i>	Cough, Cold	Boiled in water & taken orally
122. Mewa	<i>Carica papaya</i>	Jaundice	Ripe fruit is used.
123. Mash	<i>Phaseolus mungo</i>	Wound, pharyngitis, laryngitis	milk is used
124. Mane, Jaluka	<i>Inula racemosa</i>	Dysuria	Seed is used
		Dysentery	Leaf & root powder
		Abscess	(Contra indicated in pregnancy)
125. Ratigedhi	<i>Abrus precatorius</i>	Headache	Paste when locally applied enhance to ripe abscess & helps to open mouth of abscess
			Seed powder as nash
126. Rakta chandan	<i>Pterocarpus santalinus</i>	Gum disease	Stem bark used as toothpaste
		Sexual debility, Vomiting	Stem bark used as powder
		Worm infestation	
127. Raktamula			
128. Rajbrichha	<i>Cassia fistula</i>	Jaundice, Constipation	Fruit pulp taken orally with water
		Pneumonia, Cough (Children)	Leaf bud mixed with water & given 2 to 3 times a day orally
129. Lahasun	<i>Malaxis muscifera</i>	cough	piece is burnt and used
130. Lapsi	<i>Choerospondias axillaris</i>	Anorexia	Fruit
131. Lali Gurans	<i>Rhododendron arboreum</i>	Headache	Immature leaf paste locally applied
		Choking	Flower powder in the choking of fish thorn
132. Louth salla	<i>Taxus baccata</i>		Export to make the medicine of cancer
133. Bishma	<i>Aconitum bisma</i>	Toxin	Acts as antitoxin
		Diarrhoea, Joint disease	Root & tuber in powder form (Low dose)

134. Sarsyu	<i>Brasica campesters</i>	Indigestion	seed
135. Saur	<i>Betula alnoides</i>	joint pain	stem bark used as powder or decoction
136. Sadhan	<i>Ougeinia dalbergioides</i>	Backache	leaf is used
137. Sarpagandha	<i>Rauwalfia serpentina</i>	Snake bite, cut injury Mania, hypertension	Leaf & root paste In powder form
138. Satuwa	<i>Paris polyphylla</i>	Cut injury Fever, Gastritis, Worm infestation Cut injury	Root or tuber Powder stops bleeding, enhance healing (Locally) Powder form (orally) immature leaf and mouse stool mixed to go Paste and applied on the cut part which enhance healing even in the need of stitche
139. Sahasrajadi	<i>Celosia argentea</i>	Fracture, Sprain, Strain	Leaf or stem bark's juice mixed with flour & make a bread and eaten Paste of stem bark locally applied on affected part & cover with bandage
140. Sitalchini	<i>Moringa oleifera</i>	Fever and diabetes	Root powder mixed with water & given
141. Sikakai	<i>Acacia consinna</i>	Snake & Leech bite Hair fall	Fruit is used Fruit and leaf enhance the growth of hair & stops falling.
142. Siundi	<i>Euphorbia species</i>	Dysentery Toothache	Fruit & bark is used Latex soaked in cotton locally applied on affected part
143. Simal	<i>Bombax ceiba</i>	Retention of urine Dysentery Bleeding disorder (Female)	Bark juice Latex mixed with curd & used
144. Simali	<i>Vitex nigundo</i>	Sinusitis	Fruit juice leaf juice
145. Siltimur	<i>Lindera neesiana</i>	Skin disease	local application
146. Shal	<i>Shorea robusta</i>	Inflammation	Decoction of stem bark
147. Sindure	<i>Phallotus phillipensis</i>	worm infestation	leaf
148. Siru	<i>Cladonia species</i>	Worm infestation Snake bite	Root juice Used to tie proximal to the bite mark
149. Silajit	Organic exudates	Lower abdominal pain, Neurological disorder, Reproductive disorder Fracture, skin disease recurrent abortion & miscarriage Cut injuries	Boiled with water & filtered and mixed with milk and taken daily. Believe to be helpful in the treatment of cancer also. paste locally applied immature leaf & leaf bud taken as a vegetable immature leaf & leaf bud mixed with mouse stools to get paste & applied locall helps to heals faster Root, stem & leaf juice or powder
150. Srikhanda	<i>Santalam album</i>		
151. Sisnu	<i>Urtica dioca</i>		
152. sugandawal	<i>Valeriana wallichaii</i>	Epilepsy, Cholera, Toxicity	
153. Sugandhakokila	<i>Cinnamomum glaucescenus</i>	Skin diseases	Oil is used

154. Sariba	<i>Hemidesmus indicus</i>	Toxicity	root acts as antidote in toxicity
155. Harro	<i>Terminalia chebula</i>	Heart disease, Gum disease, Constipation	Fruit powder is used At bed time
156. Haledo	<i>Curcuma longa</i>	vomit, diarrhea	Rhizome powder mixed with water
157. Hadchur	<i>Viscum articulatum</i>	Bodyache, Sprain, Fracture	Taken orally or locally applied
158. Halhale	<i>Rumex nepalensis</i>	Bodyache Vomit	Leaf taken as vegetable Root juice (anti emetic)
159. Hande Wokhar	<i>Juglans regia</i>	Scabies	Bark juice locally applied
160. Yarsha gumba	<i>Cardyrops sinensis</i>	Rejuvenator, aphrodisiac Cough,	Whole plant can be used

Data Collection Instruments including questionnaires

1. Name of the village
2. Ward No.
3. Name and caste of the respondent
4. Would you tell me your age?

Age group	Tick off
Below 20	
20 - 29	
30 - 39	
40 - 49	
50 - 59	
60 and above	

5. How many members are in your family?

Sex	Number
Male	
Female	

6. Are you literate () illiterate ()

7. If literate, what is your educational status?

Educational Status	Tick off	
	Husband	Wife
Primary level		
Lower Secondary		
Below S.L.C.		
Below B.A.		
B.A. and above		

8. How many children do you have?

1 [] 2 [] 3 [] 4 [] >5 []

9. Children age:

Age group	Number of child
0 - 4	
5 - 9	
10 and above	
Total	

10. What is your occupation?

11. Economic Status

a) Low

b) Middle

c) High

12. Could you tell me the prevalence of common diseases in your community?

13. How many types of health workers are in your village?

1. Auxiliary health workers
2. Nurse
3. Doctor
4. Jhankri
5. Vaidhya
6. Traditional healers
7. Others (specify)

14. What would you do when you suffer from diseases?

1. Visit Health Post/ Health Center
2. Visit Ayurvedic Center
3. Visit Jhankri
4. Visit local Vaidhaya
5. Give herbal medicine
6. Other (specify)

15. What would you do when your family members suffer from any disease?

1. Visit Health Post/ Health Center
2. Visit Ayurvedic Center
3. Visit Jhankri
4. Visit local Vaidhaya
5. Give herbal medicine
6. Other (specify)

16. What would villagers do when suffer from disease?

1. Visit Health Post/ Health Center
2. Visit Ayurvedic Center
3. Visit Jhankri
4. Visit local Vaidhaya
5. Give herbal medicine
6. Other (specify)

17. What treatment would you prefer?

1. Allopathy
2. Herbal
3. Other (Specify)

18. Why do you use herbal medicine?

- a) Tradition
- b) Easily available
- c) Believe in herbal medicine
- d) Cheap
- e) No alternatives
- f) No idea about modern medicine
- g) Having no side effect
- h) Others (specify)

19. Could you tell me the types, parts and dose of herbal plants used in the treatment of various disease.
(Specify disease?)

Medicinal Plants	Parts of the Plant	Dose	Name of disease
1.			
2.			
3.			
4.			

(Clearly note down in notebook)

20. From where do you get medicinal plant?

- a. Locally available []
- b. Purchase []
- c. Neighbors []
- d. Other (specify) []

21. How did you know about medicinal plants?

- a. Tradition
- b. Neighbors

- c. Traditional healers
- d. Others (specify)

22. How do you prepare medicine from herbs when suffered from disease?

(Clearly note down in notebook)

23. Usually how many days take place to cure disease by herbal medicine?

24. Are you satisfied with the use of herbal medicine?

- a. Yes
- b. No

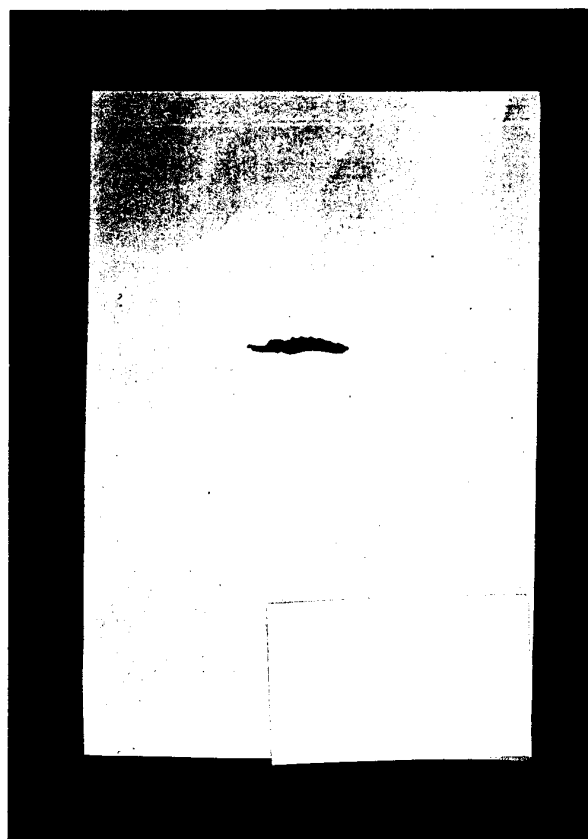
25. Have you tried other medical approach for the treatment of disease?

- a. Yes
- b. No

26. What is the present condition of medicinal plant?



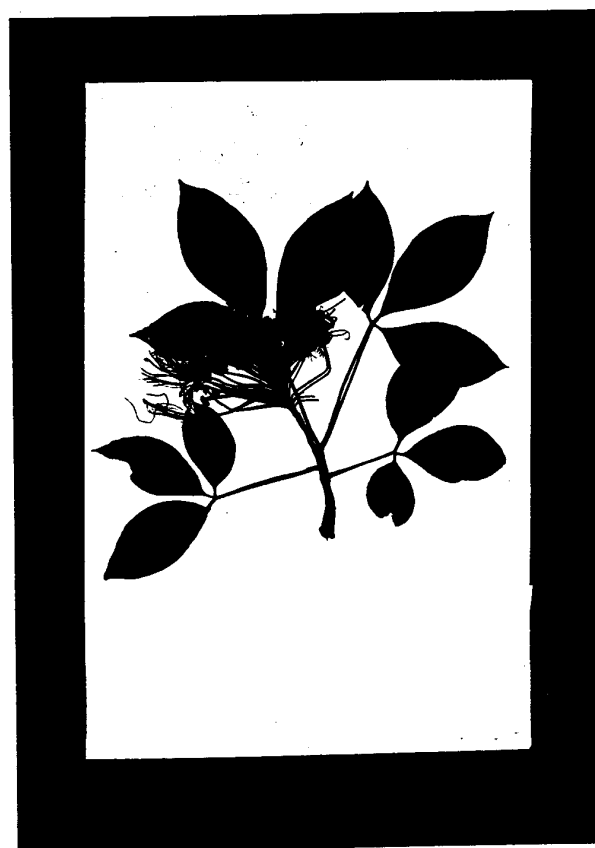
MUSALI



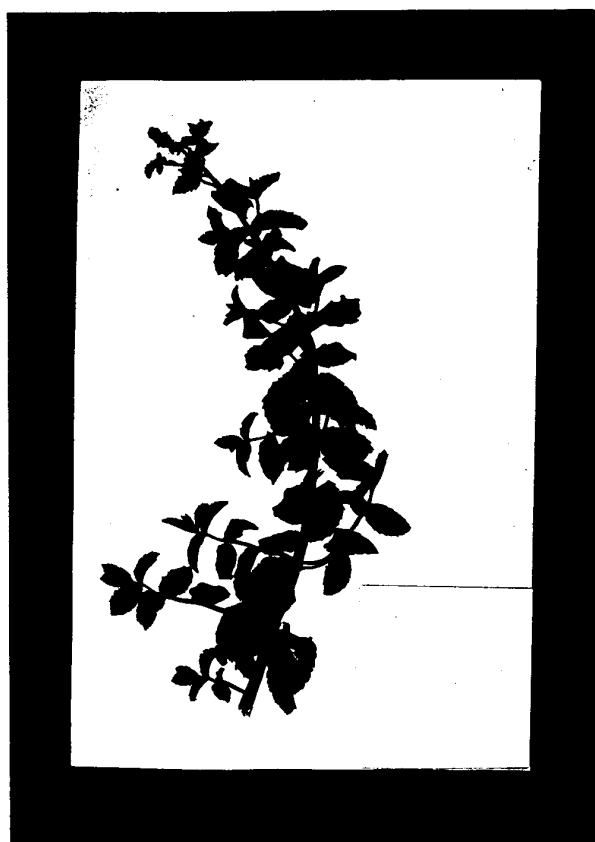
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BHRINGARAJ



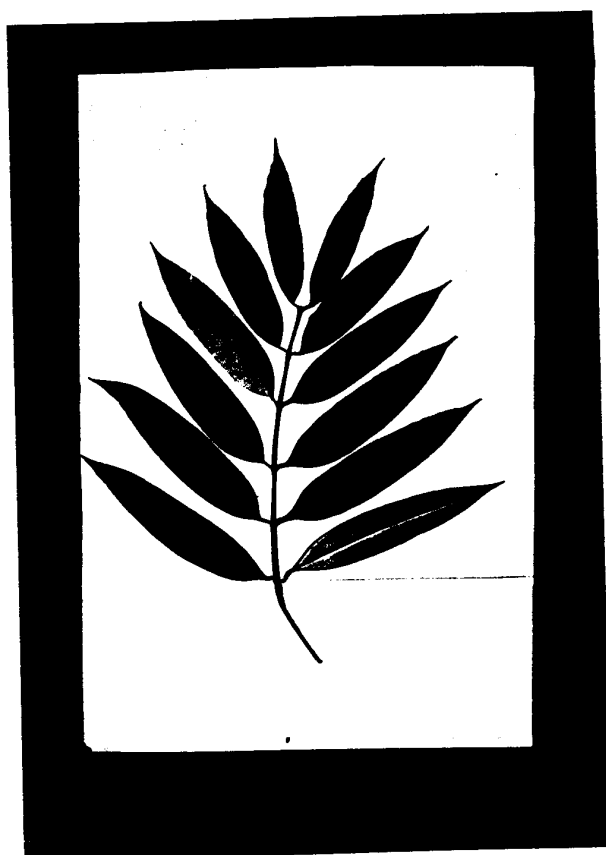
SIPLICAN



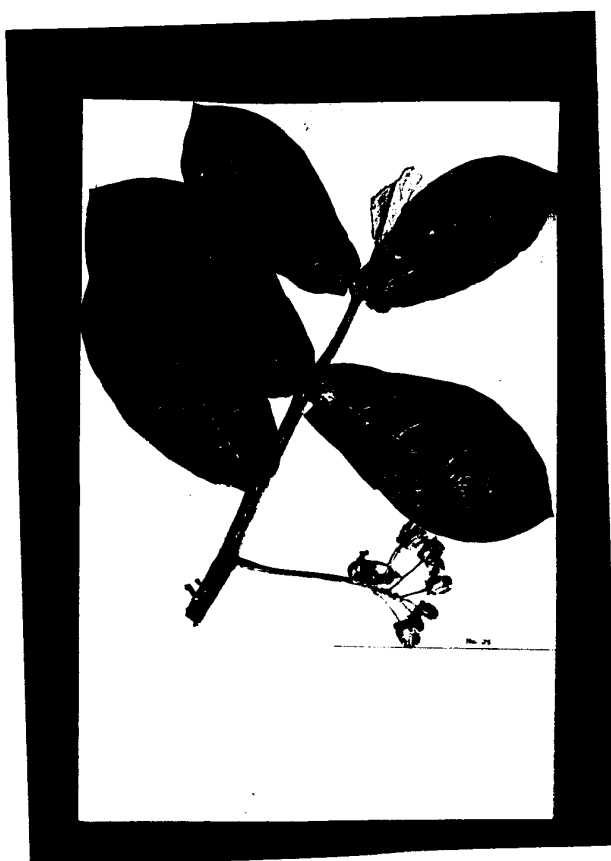
PUDINA



KOZRALO



NAGKESHAR



AANK