

Studies of Some Ethnomedicinal Plants Used by the Santal Tribal People of the District Bankura, W.B., India, In Controlling Fertility Ethnomedicine of the Santal Tribal People

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Abstract: People belonging to ethnic communities use various types of medicines for curing from different ailments. Like other ethnic people it is the inherent property of the medicine men/women of the Santal tribal communities of the district Bankura, West Bengal to prepare many products for the control of fertility. These products are mainly prepared from some uncommon plant species, collected from nearby hilly areas of the district Bankura, West Bengal.

In the present study at least 20 various ethnomedicines have been described. The mode of preparation and ways of application of the medicines varies from one medicineman to the other. These medicines are mainly used for the control of fertility of the tribal women temporarily but sometimes have been used permanently. Usually these medicines are prepared by medicinemen/women of the Santal Tribal people with the combination of a single plant or various plant parts and with some other ingredients commonly called as talans. The tribal people have their belief of the products, prepared by their own medicinemen/women. But no scientific studies have been made so far. For the betterment of the common people, these products should be studied scientifically. An analysis of the plants by the ethnopharmacologists, biochemists and reproductive physiologists will help to record the information in future.

Keywords: Ailments, Control of fertility, Ethnomedicine, Ethnopharmacologist, Medicinemen, Tribal people.

1. INTRODUCTION

Tribal societies, throughout the world, have their uniqueness in the system of medicines. Although modern medicine is widespread, traditional tribal medicine still exists in many countries across the world. The main ingredients of tribal medicines are derived from plant sources. A large proportion of the population in a number of developing countries still relies on traditional tribal medical practitioners, and on local medicinal plants to satisfy their primary health care needs.

An ethnobotanical survey (15) was conducted in Karandamalai, Tamilnadu. From the interview report, 63 medicinal plants species were enumerated and listed from the tribal communities of Tamilnadu.

Some scientists (8) made an attempt to find out the beliefs and practices related to health care system of the Sonowal Kachari tribe of Assam. They used various locally available medicinal herbs for treating different types of diseases. It was also described by some workers (2) the important medicinal plant species used by local baidya and tribal healers of tribal rich district of Orissa. Results of study on the herbal drugs in the herbal markets in Mersin and Adana were presented by some workers (9).

A detailed study(25) among the Gond tribe residing at Naoradehi Wild Life sanctuary, Madhya Pradesh was reported. 10 species of medicinal plants were recorded from the Gond Medicinal man. These plants are mainly used for fever, chest pain, bone fracture, headache, vomiting, abortion, snake bite, ear pain, eye pain and ulcer etc.

In rural and tribal areas of the State of West Bengal, India, the root of *Moringa oleifera* plant is taken by women, especially prostitutes, as permanent contraception, and it has been shown to totally inactivate or suppress the reproductive system (22). One plant species *Vicoa indica*, belonging to the family Compositae, which is used by the Adivasies (tribal population) in the State of Bihar, India to produce sterility for a period of 5-7 years was also studied (6).

AIMS OF THE STUDY:

In View of growing demand and importance of tribal medicines to control fertility and the need to recognize the services of tribal healers, attempts have been made to develop a Directory of the Tribal Healers of the district Bankura, West Bengal, India. This information will help not only to the Tribal people but to the common people of India.

The Tribal people of the district Bankura are rich in their traditional knowledge about phytomedicine and ethno medicine. But they do not have any written scripts or prescriptions. Thus information about ethno medicine especially used in controlling fertility, was collected through personal investigation among the Tribal communities and especially the Santal Tribal communities of the Bankura district, West Bengal, India.

2. MATERIALS AND METHODS

Methods:

For the present study detailed survey works were conducted(2008-2009) in the tribal rich areas of the district Bankura, W.B., INDIA . At least 20 Medicinemen/women were interrogated to know the method of preparation and application of the medicines prepared by them . These medicines are popularly known as Ethnomedicine. Usually these medicines are prepared by the Tribal people with the combination of a single plant or various plant parts and with some other ingredients commonly called as talans.

Identification of plants:

The collected plants were preserved in a herbarium sheet during the time of field study (2008-2009). Identification of the plants was confirmed by the Botanical Survey of India, Kolkata and Prof. G. G. Maity, Department of Botany, University of Kalyani, W. B. Identified plants were described with the help of 'Bengal Plants' (17) and Tribal medicine (16).

Tribal pharmacology:

Traditional tribal medicine is an age-old medical practice that existed in human societies before the application of modern science to health.

In general, the tribes show many similarities in regard to medicine, but the actual agents employed differ with the tribes and localities, as well as with individual healers. Knowledge procuring from the field study of the Bankura district it can be said that the Tribals are rich in their art of medicine preparation. They prepare the medicine in a variety of ways depending on their purpose.

Preparation and the usage of tribal medicine:

Generally the tribal people take the medicine either with fresh cold drinking water or with country liquor, rice beer or with honey as advised by the medicine men. Internal medicine is prescribed to take in empty stomach in the morning, repeated at noon and again in the evening, according to necessity. Most of the tribal medicines are prepared in combination with some ingredients like long pepper, black pepper, pipul, darchini, elachi etc., which are known as 'Talan'.

3. RESULTS

The results of the present study are mentioned in the Table - I

International Journal of Novel Research in Life Sciences

 Vol. 3, Issue 1, pp: (20-28), Month: January-February 2016, Available at: www.noveltyjournals.com
TABLE . I. REPORT OF MEDICINEMEN FOR ANTIFERTILITY PURPOSES

| Case Report No. | Plants Used | | Talans Used | Preparation of Medicine | Results |
|-----------------|-------------|---|--|---|--|
| | Common Name | Scientific Name | | | |
| Report C1 | Begna banda | <i>Vitex negundo</i> L. (Verbenaceae) | <i>Zingiber officinale</i> Rose. (Zingiberaceae) 'Dry ginger (shut)' | Roots of Chirchiti and Pan, Banda of Begna in equal proportion, two teaspoons of dry ginger and 10 nos. of Golmarich are taken and ground with water. The mixture was prepared in the form of pills. One pill is to be taken in empty stomach for three consecutive days after the last date of menstruation. | It is very effective medicine for the tribal women to prevent pregnancy. |
| | Chirchiti | <i>Achyranthes aspera</i> L. (Amaranthaceae) | | | |
| | Pan | <i>Piper betle</i> L. (Piperaceae) | | | |
| Report C2 | Tulsi | <i>Ocimum sanctum</i> Linn.(Lamiaceae) | <i>Curcuma domestica</i> Valeton, (Zingiberaceae) , 'Halud' | Leaves of Tulsi, buds of Jaba, flowers of Palas and root of Halud are ground together. One teaspoon of the mixture has to take at every morning in empty stomach for one week. | This mixture will prevent pregnancy with normal sexual life. |
| | Jaba | <i>Hibiscus rosasinensis</i> Linn.(Malvaceae) | | | |
| | Palas | <i>Butea monosperma</i> Lam.(Papilionaceae) | | | |
| Report C3 | Siakul | <i>Zizyphus oenopila</i> Linn.,(Rhamnaceae) | <i>Ferula assafoetida</i> Linn. 'Hing' | Root of Siakul, leaves of Hinga ara, Banda of Arjun & Begna were dried and smashed into pellets with the help of water. One pellet is taken with warm milk in empty stomach on the 5 th day of menstruation and continued for three consecutive days during menstrual periods. | This combination is very effective to prevent pregnancy. |
| | Hinga ara | <i>Enhydra fluctuans</i> Lour,(Asteraceae) | | | |
| | Arjun | <i>Terminalia arjuna</i> Roxb.(Combretaceae) | | | |
| | Begna | <i>Vitex negundo</i> L.(Verbenaceae) | | | |

| Case Report No. | Plants Used | | Talans Used | Preparation of Medicine | Results |
|-----------------|---------------|--|--|---|---|
| | Common Name | Scientific Name | | | |
| Report C4 | Akanda | <i>Calotropis procera</i> Linn.(Asclepiadaceae) | | Root paste of Satamuli and Sarpagandha, fresh latex of Akanda, Rice water and soil of red water 'pond' are macerated and is taken orally during morning hours on every Saturday. | It causes inhibition of fertilization and prevents pregnancy. |
| | Satamuli | <i>Asparagus racemosus</i> Linn.(Aristolochiaceae) | | | |
| | Sarpagandha | <i>Rauwolfia serpentina</i> Benth. ex. Kurz. (Apocynaceae) | | | |
| Report C5 | Ramdatan | <i>Smilax zeylanica</i> , (Smilacaceae) | <i>Piper nigrum</i> L. (Piperaceae), Golmorich | Ramdatan (root), Ananta (root), Satamuli plant, Nilkanta (root) are ground with Golmorich and form pills. Two pills are to be taken every day in empty stomach immediate after menstruation for fifteen days. | It prevents pregnancy for six month. It has no side effects. |
| | Nilkantha | <i>Polygala chinensis</i> Linn. (Polygalaceae) | | | |
| | Ananta | <i>Hemidesmus indicus</i> Linn. (Periplocaceae) | | | |
| | satamuli | <i>Asparagus racemosus</i> Linn. (Aristolochiaceae) | | | |
| Report C6 | Krishna tulsi | <i>Ocimum americanum</i> . (Lamiaceae), | Rasasindur | Roots of Krishna tulsi, Apang, Iswari, Singara and Saora tree are mixed and powdered. | It prevents pregnancy completely. |
| | Apang | <i>Achyranthes aspera</i> L. | Rasamanik | | |

International Journal of Novel Research in Life Sciences

 Vol. 3, Issue 1, pp: (20-28), Month: January-February 2016, Available at: www.noveltyjournals.com

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|--|---------|--|--|---|--|
| | | (Amaranthaceae) | | Two teaspoons of the powder with one teaspoonful of Rasamanik and Rasasindur are taken together for three days. | |
| | Iswari | <i>Aristolochia indica</i> Linn. (Aristolochiaceae) | | | |
| | Singara | <i>Bauhinia purpurea</i> Linn. (Caesalpiaceae) | | | |
| | Saora | <i>Streblus asper</i> Lour. (Moraceae) | | | |

| Case Report No. | Plants Used | | Talans Used | Preparation of Medicine | Results |
|-----------------|---------------|--|---|--|--|
| | Common Name | Scientific Name | | | |
| Report C7 | Ganda | <i>Targetes patupa</i> , (Asteraceae) | <i>Piper longum</i> L., "Pipal". <i>Enhydra fluctuans</i> Lour. Hinch. | Roots of Sarpagandha and Pan are to be immersed in water for seven days. The water should be mixed with juice of Ganda and Tulsi leaves. This mixture should be taken with small amount of Pipal powder and Hinch on fifth day of menstruation. | It prevents pregnancy for that month. |
| | Tulsi | <i>Ocimum sanctum</i> Linn. (Lamiaceae) | | | |
| | Sarpagandha | <i>Rauwolfia serpentina</i> Benth. ex. Kurz. (Apocynaceae) | | | |
| | Pan | <i>Piper betle</i> Linn. (Piperaceae) | | | |
| Report C8 | Nilkantha | <i>Polygala chinensis</i> Linn. (Polygalaceae) | Rasamanik (A short factitious kabiraji ingredient) | In a new mud pot, root of Nilkantha, Ananta, Kantikiari and 'stem of Rakta chandan & Swet chandan is cooked in fire. Rasamanik, Rasasindur, Makaradhvaj, Golmarich, blood of black chicken is mixed The Women will take as much as they can The rest of the amount will be prepared in the form of pills. 3 pills in each day will be taken for one month. | It prevents pregnancy permanently but if the women wants to revive pregnancy they have to take different medicines from him. |
| | Ananta | <i>Hemidesmus indicus</i> Linn., (Periplocaceae) | Rasasindur (A short factitious kabiraji ingredient) | | |
| | Kantikiari | <i>Solanum surattense</i> Burn. , (Solanaceae) | Makaradhvaj (A short factitious kabiraji ingredient) | | |
| | Rakta chandan | <i>Anadenanthera pavonina</i> , | <i>Piper nigrum</i> L. (Piperaceae), 'Golmarich'. | | |
| | Swet chandan | <i>Santalum album</i> (Santalaceae), | | | |
| Report C9 | Akanda | <i>Calotropis procera</i> Linn. (Asclepiadaceae) | Mustard oil | Roots of Pan and Begna and stem of Akanda are macerated with a pinch of rock salt with the help of water .The mixture then mixed with small amount of mustard oil and ghee. The mixture should be taken on Saturday after puja. | It prevents pregnancy for that month. |
| | Pan | <i>Piper betle</i> Linn. (Piperaceae), | Ghee | | |
| | Begna | <i>Vitex negundo</i> L. (Verbenaceae) | Rock salt | | |

| Case Report No. | Plants Used | | Talans Used | Preparation of Medicine | Results |
|-----------------|-------------|---|---|---|--|
| | Common Name | Scientific Name | | | |
| Report C10 | Mushroom | <i>Psalliota campestris</i> L., (Agaricaceae) | <i>Myristica fragrans</i> Houtt. 'J aiphal'. <i>Piper longum</i> L. 'Pipul'. <i>Piper nigrum</i> L. (Piperaceae), | Banda of Boan, Flowers of Palash and Mushroom are crushed to form paste with all talans mentioned above. One pill is taken with one cup of Mahua liquar early in the morning and in empty stomach | This combination is an effective oral contraceptive used |
| | Boan Banda | <i>Vitex negundo</i> L. (Verbenaceae) | | | |
| | Palas | <i>Butea monosperma</i> Lam. (Papilionaceae) | | | |

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|-------------------|----------|---|--|---|--|
| | | | Golmarich'. <i>Madhuca indica</i> J.F.Gmel. 'Mahua'.(liquor) | for 7 consecutive days. | among the tribal women . |
| Report C11 | Rohin | <i>Soymita febrifuga</i> A., (Meliaceae) | <i>Piper nigrum</i> L. (Piperaceae) , 'Golmarich'. | 25 gms of Rohin and Saora bark, 5 gms of white Akanda flower, 10 gms of Golmarich, 10 gms of Darchini and 10 gms of Pipul was powdered and mixed to form pills. One pill has to be taken per day for 5 days from the last day of menstruation. It has to be continued for six months. | It prevents pregnancy for one year. It has a long term effects without any side effects. |
| | Saora | <i>Streblus asper</i> Lour. (Moraceae) | <i>Laurus cinamonum</i> Wild. 'Darchini' | | |
| | Akanda | <i>Calotropis procera</i> Linn. (Asclepiadaceae) | <i>Piper longum</i> L. 'Pipul'. | | |
| Report C12 | Nishinda | <i>Vitex negundo</i> L. (Verbenaceae) | <i>Madhuca indica</i> J.F.Gmel. 'Mahua' | Roots of Nishinda, banda of Ramdatan and bark of Nim are pasted with Mahua liquor. | It prevents pregnancy. |
| | Ramdatan | <i>Smilax zeylanica</i> , (Smilacaceae) | | | |
| | Nim | <i>Azadirachta indica</i> A.Juss. (Meliaceae) | | | |

| Case Report No. | Plants Used | | Talans Used | Preparation of Medicine | Results |
|-------------------|-------------|--|---|---|--|
| | Common Name | Scientific Name | | | |
| Report C13 | Pan | <i>Piper betle</i> L. (Piperaceae) | | Roots of Pan, Nishinda and Sarpagandha are grinded together. Three teaspoonfull of paste have to eat with water and common salt. After menstruation the drug has to take for three consecutive days at morning and in empty stomach. | It prevents pregnancy for that month with no side effects. |
| | Nishinda | <i>Vitex negundo</i> L. (Verbenaceae) | | | |
| | Sarpagandha | <i>Rauwolfia serpentina</i> Benth. ex. Kurz. (Apocynaceae) | | | |
| Report C14 | Jaba | <i>Hibiscus rosasinensis</i> L.(Malvaceae) | | The barks of Asoka tree washed thoroughly and sun-dried to reduce its moisture content. It is then grinded and sieved. The dry powder is pasted with floral parts of Jaba. The medicine has to take everyday at morning. | It prevents pregnancy with no side effects. |
| | Ashoka | <i>Saraca asoca</i> , (Caesalpiniaceae) | | | |
| Report C15 | Methi | <i>Trigonella foenum-graecum</i> (Fabeceae) | <i>Piper nigrum</i> L. (Piperaceae) , 'Golmarich' | Roots of Chirchiti, Pan and Sarpagandha, Banda of Begna, seeds of Methi, Golmarich are grinded together with water. The mixture was dried in the form of pills. One pill is to be taken in empty stomach for five consecutive days after the last date of menstruation. | It is very effective medicine for the tribal women to prevent pregnancy. |
| | Chirchiti | <i>Achyranthes aspera</i> L.(Amaranthaceae) | | | |
| | Begna banda | <i>Vitex negundo</i> L.(Verbenaceae) | | | |
| | Pan | <i>Piper betle</i> L. (Piperaceae) | | | |
| | Sarpagandha | <i>Rauwolfia serpentina</i> Benth. ex. Kurz. (Apocynaceae) | | | |

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| Case Report No. | Plants Used | | Talans Used | Preparation of Medicine | Results |
|-----------------|--------------|--|--|---|--|
| | Common Name | Scientific Name | | | |
| Report C16 | Padma | <i>Nelumbo nucifera</i> , (Nelumbonaceae) | Eggs of snail | Flowers of Padma and Tal, roots of Pan and Dhawai are grinded with water. They are mixed with eggs of snail and are dried in the form of pills. Five pills are to be taken in empty stomach for three consecutive days after the last date of menstruation. | It is very effective to prevent pregnancy. |
| | Pan | <i>Piper betle</i> L. (Piperaceae) | | | |
| | Tal | <i>Borassus flabellifer</i> Linn.,(Arecaceae) | | | |
| | Dhawai | <i>Woodfordia fruticosa</i> Linn., (Lythraceae) | | | |
| Report C17 | Nishinda | <i>Vitex negundo</i> L. (Verbenaceae) | <i>Piper nigrum</i> L. (Piperaceae) , ‘Golmarich’. | A paste is made by crushing roots of Nishinda and Shimul, leaves of Bel with 10 Golmarich. The dose is 10 pills per day taken orally at the date of termination of menstruation in empty stomach. | It prevents pregnancy for that month. |
| | Shimul | <i>Bombax ceiba</i> (Bombacaceae) | | | |
| | Bel | <i>Aegla marmelos</i> L.Corr. (Rutaceae) | | | |
| Report C18 | Kagji | <i>Citrus aurantifolia</i> , (Rutaceae) | | A paste is made by crushing leaves of Kagji, Barundaru and leaves of Vilati tulsi. Pills are made with the paste. Three pills should be taken in each day for three consecutive days from the first day of menstruation. | It prevents pregnancy for that month. |
| | Barundaru | <i>Crateva nurval</i> , (Capparaceae) | | | |
| | Vilati Tulsi | <i>Hyptis suaveolens</i> Poit (Lamiaceae) | | | |
| Report C19 | Barundaru | <i>Crateva nurval</i> , (Capparaceae) | | Pills are made from the roots of Barundaru and Kanta saru plants. One pill with leaf bud mucilage of Kadam should be taken for all the days of menstruation for checking conception. | It prevents pregnancy permanently. |
| | Kadam | <i>Haldina cordifolia</i> Roxb. (Rubiaceae) | | | |
| | Kanta saru | <i>Lasia spinosa</i> Linn.(Aroideae) | | | |

| Case Report No. | Plants Used | | Talans Used | Preparation of Medicine | Results |
|-----------------|-------------|---|--|--|---------------------------------------|
| | Common Name | Scientific Name | | | |
| Report C20 | Kagji | <i>Citrus aurantifolia</i> , (Rutaceae) | <i>Piper nigrum</i> L. (Piperaceae) , ‘Golmarich’ <i>Ferula assafoetida</i> Linn ‘Hing’. <i>Coriandrum sativum</i> ‘Dhania’ <i>Terminalia chebula</i> ‘Haritaki’ | A paste is made by crushing bark of Sajna and flowers of Kagji with the above mentioned talans. The dose is 4 pills per day taken orally at the date of onset of menstruation in empty stomach | It prevents pregnancy for that month. |
| | Sojna | <i>Moringa oleifera</i> Lam (Moringaceae) | | | |
| | | | | | |

4. DISCUSSION

Plants have been used worldwide for the treatment of various human ailments since antiquity. Their use is still quite prevalent in the district Bankura in the form of traditional / folkloric system of medicine. The diagnosis of diseases by the tribal medicine men of Bankura district is interesting because they live in the interior remote villages surrounded by forests, where communication system is quite inaccessible. Due to lack of modern medical facilities these people have to depend on the tribal medicine men / women and old methods of treatment. They believe that all ailments are caused by Supernatural power and the Almighty God is the only power for curing the ailments. However, they treat the diseases using some portion of medicinal plants uttering some folkloric songs to the God.. A large number of these plants are used for the purpose of birth control within the Santal Tribal People of the district.

The variety of trees, shrubs and creepers are noteworthy in the territory of Bankura. The hills like Susunia, Biharinath, and its surroundings, areas like deep forest zones of Ranibandh, Khatra, Sonamukhi etc. are covered with lots of natural, rare and herbal plants. Inside the forest there are varieties of flora. The medicine men/women of the district used the plants either singly or in combination with other plants or chemicals. After preparation they apply the medicines on the common tribal women.

In general, the tribes show many similarities in regard to their medicine, but the actual agents employed differ with the tribes and localities, as well as with individual healers of the district.

Among the plants used by the tribal people of Bankura district some of them already have been described for their antifertility functions. *Ayurvedic* herbal formulations and single plant drugs used traditionally in the treatment of gynaecological disorders were described(13).

Abroma augusta, *Abrus precatorius* L., *Butea monosperma* are experimentally proved as a very good womb purifier and contraceptive medicine (21). Antifertility functions of *Momordica charantia* was observed by several scientists (10,3,14,7,18,24). Contraceptive potency of *Pueraria tuberosa* was screened at different time (23,20,19,11). Methanolic extract of both *Cuscuta reflexa* stem and *Corchorus olitorius* seed arrested the normal oestrus cycle of the adult female mouse and significantly decreased the weight of ovaries and uterus, inhibited steroidogenesis and the antifertility function may be due to the presence of flavonoids (12) .

Andrographis paniculata (Kalmegh) was used at many a times for antifertility as well as pregnancy-terminating purposes. In India, it is recommended as the contraceptive agent. To determine the actual effects on fertility, number of studies were done in male rats which stopped spermatogenesis (development and maturation of sperm cells (1)). It was also reported (27) the antifertility effects of *Andrographis paniculata* on female mice. Studies in cultured human placental tissue showed that andrographolide sodium succinate (derived from *Andrographis paniculata*) was effective in inhibiting human progesterone production (26).

From Ayurvedic medicine, it has been claimed that the leaf of *A. marmelos* possess contraceptive efficacy(4). Leaves of *Aegle marmelos* are used for contraceptive purpose in males in different tribal areas. The mode of action and the possible ways of its contraceptive activities was also observed by some workers (5). *Azadirachta indica* was tested for its antifertility property at different times. The seed oil of *Azadirachta indica* A. Juss (neem) and *Melia azedarach* Linn (dharek) are used in traditional medicine for its antifertility properties. *Moringa oleifera* root was shown to have unique estrogenic, antiestrogenic, progestational and antiprogestational activities (22).The crude extract, its different fractions and the major pure compound from the active fraction of the powdered fruits of *Piper longum* were studied for the antifertility effects in female rats.

There is a growing interest in correlating phytochemical constituents of a plant with its pharmacological activity. More coordinated multidimensional research aimed at correlating botanical and phytochemical properties to specific pharmacological activities is expected.

In the present study antifertility properties of many plants have been reproduced. Excepting few plants none have been tested so far regarding their efficacy. But the tribal medicinemen and women are quite confident about their antimplantational activity. Time has come to prove their activity in a rational way. So it will be the work of ethnopharmacologist and reproductive physiologist to make a joint venture to record all the information about the plants which are used for antifertility purposes.

5. CONCLUSION

India is a thickly populated country. Most of the people who live in the interior rural areas have no idea about contraception. Although there are some medicines available in the market for contraception but for the poor, undernourished and uneducated people it is very troublesome to buy and use the modern medicines for this purpose. In India, the Tribals of various areas have their belief on the medicines prepared by their own medicinemen of their locality. The medicinemen/women of the District Bankura, W.B., INDIA, also have the idea to prepare some medicines from the plant parts and other ingredients for the control of fertility. In this investigation at least 20 prescriptions have been raised by the Tribal Medicinemen/women of that areas. But for the interest of the common people of India that should be studied and varified scientifically.

ACKNOWLEDGEMENTS

The authors are obliged to the common tribal people and especially the medicinemen/women of various regions of the District Bankura, W.B., India. Authors are also thankful to various organizations and Prof G.Maity, Professor , Department of Botany, University of Kalyani, Nadia, W.B. for identifying the medicinal plants collected during the time of study.

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