



Ethno Medicinal Plants used for Aphrodisiac Activity in North-East, India

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i38B32129

Editor(s):

(1) Dr. Fahmida Khan, National Institute of Technology Raipur, India.

Reviewers:

(1) Justin R. Nayagam, Mahatma Gandhi University, India.

(2) Sandeep Madhukar Lahange, National Institute of Ayurveda, India.

Complete Peer review History: <https://www.sdiarticle4.com/review-history/70874>

Systematic Review

Received 14 May 2021
Accepted 18 July 2021
Published 28 July 2021

ABSTRACT

North Eastern Region of India is the home for a wide variety of plants with high medicinal value. The wide availability of the plant with high medicinal value has provided the ease of their use for generations among the various ethnic communities of the region to treat various kinds of health issues. This paper presents an extensive review of the various plants that were pointed out in various ethno botanical surveys that are being used by the people of North Eastern India with aphrodisiac activity. The common name along with the biological names and the part used and other details have been reported in the paper with an intention of making it easier for researchers to develop newer herbal aphrodisiac formulations.

Keywords: Medicinal plants; aphrodisiac; ethnic communities; north eastern region; herbal aphrodisiac formulations.

1. INTRODUCTION

Among all the other regions of India, North Eastern Region is referred as the green bed of the country. The greenery of the region covers the states like Assam, Meghalaya, Manipur,

Arunachal Pradesh etc. which are having an abundance of variety of plants and herbs having high medicinal value. The availability of this diverse range of flora and fauna is because of the climatic condition of the region which facilitates the proper growth and development.

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The rainfall received in the region is around 211.76 cm which is one of the main factor for sustaining the biodiversity of the region [1]. All this wide range of plant varieties include a large number of medicinal plants which are being used traditionally for a long period of time by the people of this region to treat various health disorders. Natural products not only in northeast India but in all over the world represent a promise to cure almost all kind of health disorders, as most of the synthetic drugs have their root of origin from natural source [2,3]. It is estimated that 60% of the world total population and 80% of the total population of developing countries are dependent on traditional medicine for treatment of almost all kinds of diseases, mostly plant drugs [4]. In India over 3000 plants are recognised for their medicinal value. It has been estimated that over 6000 plants in this country are used as traditional, folk and herbal medicine [5]. Among all this known plants a number of plants are being widely used all over the country for their aphrodisiac activity.

Aphrodisiacs are any and every substance from natural (including plants and animal) and synthetic origin which have the ability to arouse sexual instinct, induces or brings up venereal desire and increases pleasure, stamina and performance. The term aphrodisiac have found its origin in Greek mythology, from 'Aphrodite' the Greek goddess of love and these substances are derived from plants, animals or minerals and since time immemorial they have been the passion of man [6]. There are two main types of aphrodisiacs, psycho physiological stimulating factors (visual, tangible, olfactory and hearing) preparations and internal preparations (food, alcoholic drinks etc) [7]. In the Oxford English Dictionary aphrodisiac is defined as "A drug or preparation inducing venereal desire". Venereal desire is described as the sexual appetite, and can be understood as a desire for sexual stimulation. In theory, aphrodisiac is strictly an agent which arouses or increases sexual desire, but in practice any natural or chemical compound which increases the capacity for sexual enjoyment will tend to increase the appetite and can be considered as an aphrodisiac [8]. Thus any substance which can excite an individual and increase the stamina and sexual performance can also be used for the treatment of erectile dysfunction and male impotency.

Erectile dysfunction (ED) or (male) impotence is a sexual disorder which can be characterized by the inability of an individual to develop or

functionally maintain the erection of penis. The causes of erectile dysfunction may be physiological or psychological [9]. Erectile dysfunction (i.e. inability to achieve and maintain an erection sufficient for mutually satisfactory intercourse with his partner) is one of the serious medical and social symptoms that occur in men. Sexual dysfunction is a serious medical and social symptom that occurs in around 10-50% of men and 25-63% of women. It is the repeated inability to achieve normal sexual intercourse male impotence (or) ED is a significant problem that may contribute to infertility function decreases spontaneously with advanced ageing [10]. It occurs commonly in middle aged adults and older males ageing more than 50 years. Erectile dysfunction is mostly affected by diabetes mellitus, antihypertensive, antipsychotic, antidepressant therapeutic drugs. Organic causes of ED like Hypogonadism, hyperprolactinaemia, and neurological disorders other factor involves various factors such as psychological disorders like Anxiety, depression, stress, fear of sex, neurological disorders, stroke, cerebral trauma, Alzheimer, Parkinson's disease enile disease-phimosi, peyronies, life style-chronic alcohol abuse, cigarette smoking, ageing, decrease in hormone level with age. Systemic diseases like cardiac, hepatic, renal, pulmonary, and cancer [11]. Treatment of ED involves several natural aphrodisiac potentials.

2. MATERIALS AND METHODS

The study was carried out in selected parts of the North Eastern states of India, especially in the nearby villages of the state capitals of the states namely, Assam (Guwahati), Manipur (Imphal), Nagaland (Kohima), Meghalaya(Shillong) and Arunachal Pradesh (Itanagar). Inadequate mode of approach for modern medicine and health care facilities, this is the reason because of which natural or herbal medicine have played an important role in their lives for generations for maintaining the health care system in such remote areas. All tribe has their own customs and tradition, languages and beliefs. They are also known for their knowledge about the use of herbal plants which are used as medicine. Among them the local traditional healers have the practical knowledge on medicinal plants, their usage and the types of diseases treated etc.

In this particular study the ethno medicinal information practiced by the different ethnic communities of the region was collected through the field visits in the areas inhabited by different

ethnic communities. The general people including local healers and village elders were interviewed. While gathering the data special care was taken to such that only the areas which were most inaccessible to medical institute, non-motorable and where record of use of those traditional plant for treatment has been continuing till date are to be selected. The different parameters used includes the participation of the local people, traditional healers etc. The information on different species of plant was mainly collected from the gaon burahs, traditional healers (Bejs/ bejanis), local tribal old women and men. Adopting the methods of Jain [12], ethno medicinal data were collected through general conversations with the informants.. There were formal discussions, questionnaires and schedule. Women were given a significant role in discussion since they are found to have more information about the use of local herbs in curing various diseases. The collected plant material used ethno medicinally were identified. Preliminary identification of those collected plant materials, information regarding their mode of use and their local names were recorded with the help of these traditional medicine practitioners and village elders. After the complete survey among the different tribes of those localities, from February 2020 to February 2021, a list of 20 such plants have been identified which are being used in various mode

of use based on their knowledge and belief for their aphrodisiac activity among the localities for a long period of time.

3. RESULTS

The obtained result of this study has listed in the Table 1, in which the traditionally used medicinal plants are named along with their local name botanical name, parts used, family, chemical constituents and their use.

It is observed that, most of the remedies consisted of single plant part and more than one method of preparation. However, some of the remedies consisted of different parts of the same plant species to treat single or more diseases. It is also observed that the maximum number of plant species is utilized as a combination of more than one species of plants.

Expected Mechanism of Action: Based on the scientific research carried out on few of the above mentioned plants, the aphrodisiac activity of those plants is expected to have the same mechanism of action. Several studies have been carried out to and an extensive literature survey suggest the below mentioned route of action (Fig. 2) for showing the aphrodisiac activity.

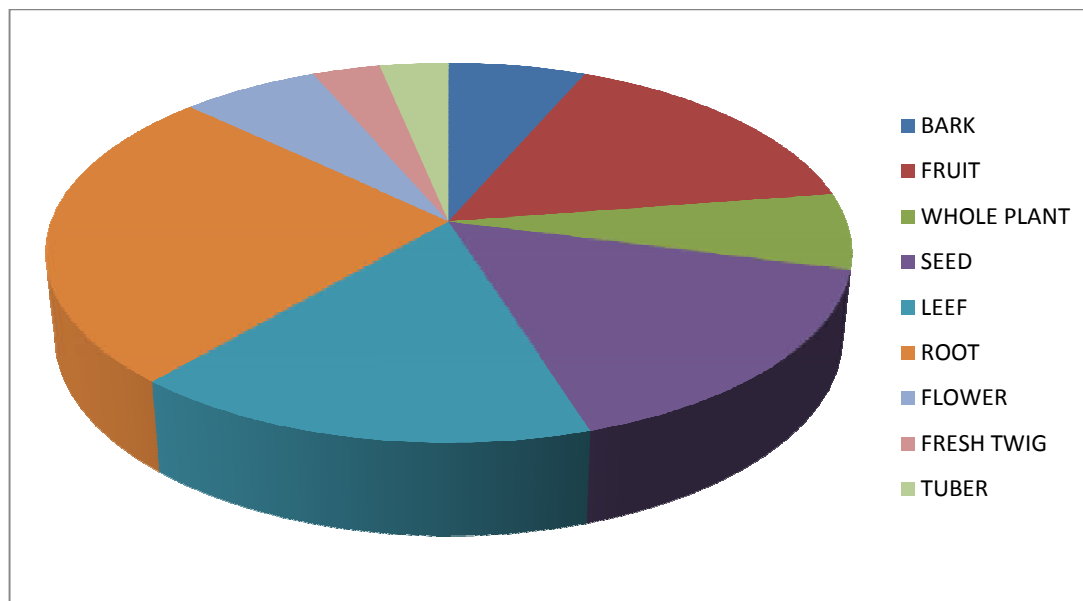


Fig. 1. The percentage of whole plants and their parts used for aphrodisiac activity and erectile dysfunction

Table 1. Different plants used in North East India having potential aphrodisiac activity

SI. No.	Scientific name	Family	Local name	Chemical constituents	Parts used	Used in
1	<i>Achyranthes aspera</i> Linn.	Amaranthaceae	Apamarg, Latjeera	ecdysterone, n-hexacos-14- enoic, oleanolic acid, triacontanol, spinasterol, dihydroxy ketones, spathulenol, alkaloids, D- glucuronic, Betaine, Achyranthine [13]	Root	Aphrodisiac [14]
2	<i>Amaranthus spinosus</i>	Amaranthaceae	Kutura hak	hesperidin, rutin, (E)-ferulic acid, tyrosine, arginine, spinasterol, spinasterol 3-O-β-D-glucopyranoside [15]	root	Increase fertility, potency, Aphrodisiac [16]
3	<i>Argyreia speciosa</i>	Convolvulaceae	Bichtarak	7- hydroxy-6-methoxycoumarin; 6, 7- dihydroxycoumarin; furanocoumarin and scopoletin-7-O-β- glucopyranoside [17]	Flower, Root	Increase fertility, potency, Aphrodisiac [16]
4	<i>Asparagus racemoses</i>	Asparagaceae	Sotomool	Asparagamine A, shatavaroside A, shatavaroside B, filiasparoside C, shatavarins [18-19]	Root	Gives stamina, enhances fertility in both male and female, Aphrodisiac [20]
5	<i>Capsicum annuum</i> L	Solanaceae	Jolokia	capsaicin, dihydrocapsaicin and nonivamide [21]	Seed	Aphrodisiac [14]
6	<i>Cardiospermum helicacabum</i>	Sapindaceae	Jaal koro	cyclohexane-1, 4, 5-triol-3-one-1-carboxylic acid, benzene acetic acid, caryophyllene, phytol and neophytadiene [22]	Leaf, Root	Impotency, Aphrodisiac [16]
7	<i>Costus speciosus</i>	Zinziberaceae	Jamla khuti	α-amyirin stearate, β- amyirin, lupeol, palmitic acid, stearic acid, oleic acid, linoleic acid, arachidic acid, gadoleic acid and behenic acid [23]	Tuber	Leucorrhoea, Impotency, Aphrodisiac [16]
8	<i>Enydra fluctuans</i>	Asteraceae	Helochy	myricyl alcohol, kaurol, cholesterol, sitostero myricyl alcohol, kaurol, cholesterol, sitostero myricyl alcohol, β- carotene, germacranolide, enhydrin, fluctuanin [24]	Whole plant	Aphrodisiac, Impotency, Infertility [16]
9	<i>Glycyrrhiza glabra</i>	Fabaceae	Jesto modhu	Glycyrrhizin, phytoestrogens [25-26]	Root	Provides energy, enhances fertility in male, Aphrodisiac [20]
10	<i>Ipomoea Aquatica</i>	Convolvulaceae	Kalmou	prostaglandin, leukotriene, N-cis-feruloyltyramines [5, 27], vitamins such as A,	Fresh twig	Aphrodisiac, induce Fertility [16]

Sl. No.	Scientific name	Family	Local name	Chemical constituents	Parts used	Used in
11	<i>Leea macrophylla</i>	Vitaceae	Doolmudra	B1, B2, B6, B12, C, E, K [27-29] alkaloids, steroids, glycosides, saponins, carbohydrates, proteins and tannins [30-32]	Leaf, Root	Aphrodisiac, Impotency, Infertility [16]
12	<i>Mangifera indica</i>	Anacardiaceae	Aam	Mangiferin, urushiols, δ -3-carene, α -gurjunene, β -selinene, β -caryophyllene, δ -3-carene, α -pinene [33-34]	Fruit	Impotency, Aphrodisiac [16]
13	<i>Mesua ferrea</i>	Clusiaceae	Nahor	1,5-dihydroxyxanthone (II), euxanthone 7-methyl ether (IV) and β -sitosterol [35]	Flower, seed	Impotency, Aphrodisiac [16]
14	<i>Moringa oleifera Lamk.</i>	Moringaceae	Sojina	Lutein, β -carotene, phytol fatty acid ester, polyprenol, β -sitosterol	Green fruits, Seed, Tender leaves	Provides energy, enhances fertility in male, Aphrodisiac [20]
15	<i>Pongamia pinnata</i>	Fabaceae	Karos	pinnatin, Karangin, pongamol, pongagalabrone, Pongone, Galbone, Pongalabol, pongagallone A and B [37]	Seed, root, Bark, leaf	Treatment of impotency, infertility, Aphrodisiac [16]
16	<i>Sida rhombifolia</i>	Malvaceae	Boriala	copoletin, scoporone, ethoxy-ferulate, kaempferol, kaempferol-3-O- β -d-glycosyl-6"- α -d-rhamnose, quindolinone, 11-methoxy-quindoline, quindoline [38]	Whole plant	Enhance sexual strength, Aphrodisiac [16]
17	<i>Sterospermum suaveolens</i>	Bignoniaceae	Patla	Cycloolivil Lapachol, β -sitosterol [39]	Leaves	Increase fertility, potency, Aphrodisiac [16]
18	<i>Terminalia arjuna</i>	Combrataceae	Arjun	arjunic acid, arjunolic acid, arjungenin, arjunglycosides, gallic acid, ellagic acid, Oligomeric Proanthocyanidines (OPCs) [40]	Bark, Fruit	Aphrodisiac, erectile dysfunction [16]
19	<i>Terminalia bellirica</i>	Combrataceae	Bhomora	corilagin, chebulagic acid, galloylpunicalagin, and digalloyl-hexahydroxydiphenoyl-hexoside [41]	Fruit, Seed	Impotency, Aphrodisiac [16]
20	<i>Trichosanthes dioica Roxb</i>	Cucurbitaceae	Potol	Cucurbitacin-B vitamin A, vitamin C, tannins, saponins, alkaloids, mixture of noval peptides, proteins tetra and pentacyclic triterpenes [42]	Fruit	Aphrodisiac [14]

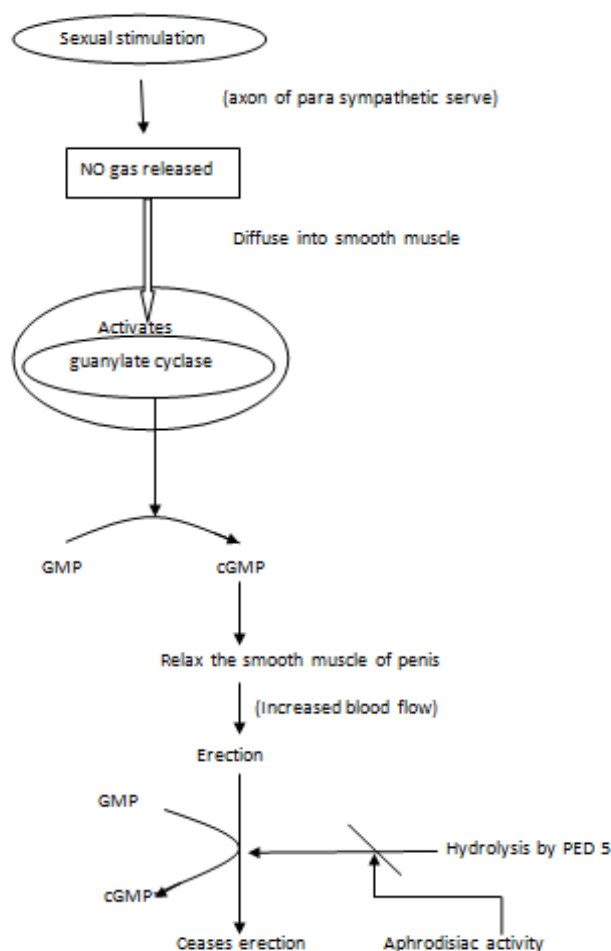


Fig. 2. Flow chart for the mechanism of action of the plants for their aphrodisiac activity [43-44]

4. DISCUSSION

The detailed survey in the study revealed that this listed 20 plants (Table 1) have been in use in most of the communities in the region and have potential aphrodisiac activity. Among these 20 named plants around 12 plants have been found in use for the mentioned purpose among almost all the surveyed communities. The identified plants belongs to families such as Anacardiaceae, Asteraceae, Combrataceae, Zinziberaceae etc. different mode of administration like oral, topical etc are being used for different kind of preparations such as paste, extract, juice, tablet and also as an infusion, based on their acquired knowledge and belief. In a maximum number of plants

preparations made with the root of the plants have been in use majorly, other commonly used parts for making the preparations are seed, leaf and fruit. All this identified plants have been associated with aphrodisiac activity in almost all the communities and are in use for over a long period of time.

5. CONCLUSION

The study describes the abundance of knowledge of traditional medicine among the people belonging to various ethnic groups in North Easter India. Although the flow of the knowledge among the people for the traditional use of medicine have not stopped despite of the dilution of perception over the effectiveness and

safety for the use of traditional medicine, the risk of extinction of this valuable knowledge is increasing because of improper record, lack of interest among the young generations of the tribes for acquiring traditional knowledge and blending of modern health care facilities among all. Thus proper care should be taken to preserve this valuable form of information. As the demand of traditional medicine is increasing day by day as because it is believed that natural medicine is associated with lesser risk factor as compared to the existing and most widely used allopathic system of medicine. The study describes the plant profile including its scientific name, common names, part of the plant used for the activity, thus will enable researchers from various background and places to focus onto these plants and carry out extensive research on the basis of the information provided in this review and come up with newer and safer drug in near future.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

ACKNOWLEDGEMENT

Authors are greatly thankful to Dr. Biplab Kumar Dey, Dean, Faculty of Pharmaceutical Science Assam downtown University Guwahati-26, Assam, India, and Moksood Ahmed Laskar for their support and help.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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