

Review Article

PHARMACOLOGICAL POTENTIAL OF PLANT USED AS APHRODISIACS

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ABSTRACT

Erectile dysfunction (ED) or male impotence is defined as the inability of a man to achieve and maintain an erection sufficient for mutually satisfactory intercourse with his partner. Sexual health and function are important determinants of quality of life. To overcome the problem of sexual (or) erectile dysfunction various natural aphrodisiac potentials are preferred. The present review discuss about aphrodisiac potential of plants, its biological source, common name, part used and references, which are helpful for researcher to development new aphrodisiac formulations.

Keywords: Erectile dysfunction, Male impotence, Aphrodisiac potentials, Herbal drugs.

INTRODUCTION

An aphrodisiac is defined as an agent (food or drug) that arouses sexual desire. Many natural substances have historically been known as aphrodisiacs in Africa and Europe, such as Yohimbine and the Mandrake plant, as well as ground Rhinoceros horn in the Chinese culture and "Spanish fly" which is actually toxic¹⁻³. Even in today's culture there are certain foods that are used as aphrodisiacs, including strawberries and raw oysters. Although these natural items are touted as aphrodisiacs, there is little scientific evidence supporting those assertions. In a recent study conducted in the Boston area, 52% of men between the ages of 40 and 70 reported some degree of erectile dysfunction⁴. Enhanced sexual behavior may provide increased relationship satisfaction and self-esteem in humans⁵. Therefore, the study of aphrodisiacs is important because they may provide a means to treat the psychological components of sexual dysfunction as opposed to the current treatments, surgical implants and injection therapy, which only treat the mechanical component².

Male impotence also called erectile dysfunction (ED) is a common medical condition that affects the sexual life of millions of men worldwide⁶⁻⁷. Erectile dysfunction is defined as the inability of a man to achieve and maintain an erection sufficient for naturally satisfactory intercourse. Sexual dysfunction is a serious medical and social symptom that occurs in 10-52% of men and 25-63% of women⁸. It is the repeated inability to achieve normal sexual intercourse male impotence (or) erectile dysfunction is a significant problem that may contribute to infertility⁹. Erectile dysfunction is adversely affected by diabetes mellitus, antihypertensive, antipsychotic, antidepressant therapeutic drugs. Organic causes of

erectile dysfunction like hypogonadism, hyperprolactinaemia, and neurological disorders¹⁰.

Treatment of ED involves several natural aphrodisiac potentials. Sexual dysfunction caused by various factors such as psychological disorders like Anxiety, depression, stress, fear of sex, neurological disorders, stroke, cerebral trauma, alzheimer's, Parkinson's disease and chronic disorders—diabetes, hypertension, vascular insufficiency, Atherosclerosis, penile disease phimosi, peyronies, life style—chronic alcohol abuse, cigarette smoking, aging decrease in hormone level with age. Systemic diseases—cardiac, hepatic, renal, pulmonary, cancer¹¹⁻¹³. Pharmacotherapy involves locally acting vasoactive drugs such as papaverine and alprostadin¹⁴ and first line oral therapy for ED includes phosphodiesterase type-5 (PDE-5) inhibitors such as sildenafil, verdenafil and tadalafil which inhibit hydrolysis of second messenger cyclic guanosine mono phosphate (GMP) release with in penile smooth cells¹⁵⁻¹⁶. The available drugs and treatments have limited efficacy, unpleasant side effects and contraindications in certain disease conditions. Sildenafil Citrate (Viagra) is a successful drug that modifies the hemodynamics in the penis¹⁷. But side effects with this drug are headache, flushing, dyspepsia and nasal congestion is reported with this treatment¹⁸. Indian medicine ayurveda includes Vajakarna therapy which involves aphrodisiacs for erectile dysfunction, causes of infertility, spermatogenesis, semen genesis reproduction, methods of correcting defective semen and sexual satisfaction¹⁹.

Mechanism involved in Aphrodisiac potentials

On sexual stimulation (visual (or) otherwise the fames of the axons of parasympathetic nerves release nitric oxide (NO) gas. The gas diffuses into smooth muscle cells that line those arteries of the corpus carvenosum (spongy



erectile tissue) and activates the enzyme guanylate cyclase (GC). The later converts the nucleotide guanosine triphosphate (GTP) into cyclic guanosine monophosphate (C.GMP). The C.GMP in turn causes the smooth muscle cells around the penis to relax, leading to dilation and increased flux of blood into the penile tissue. This blood is essentially trapped in the penis and results in an erection²⁰. The erection ceases after a while because C.GMP is hydrolyzed by phosphodiesterase type-5 enzyme (PDE-5)

into inactive GMP. (The PDE-5 enzyme resides in the penile tissues). Aphrodisiac potentials inhibit the hydrolyzing action of PDE-5 with the result that active C.GMP can accumulate. 'Undisturbed' and prolong the erection through increased blood flow²¹. Since many people are now relying on herbal medicines for health care²². The plants having aphrodisiac potential are listed in Table 1.

Table 1: Plants containing Aphrodisiac activity

Sr. No.	Scientific name	Common name	Family	Part used	References
1.	<i>Abelmoschus moschatus</i>	Musk mallow	Malvaceae	Seed	23-24
2.	<i>Abrus precatorium</i> Linn.	Ganja	Fabaceae	Seed	25
3.	<i>Abrus precatorius</i> L.	Crab's Eye	Papilionaceae	Seed	26-27
4.	<i>Abutilon indicum</i> (Linn.) Sweet	Thuthi	Malvaceae	Seed, root, bark, leaf	23
5.	<i>Acacia catechu</i> Willd.	Catechu	Mimosaceae	Heartwood	23, 28
6.	<i>Acacia nilotica</i> L. Willd.	Gum Arabic tree	Fabaceae	Bark	29
7.	<i>Aconitum heterophyllum</i> Wall.	Attesh	Ranunculaceae	Root	30
8.	<i>Acorus calamus</i> Linn.	Sweet flag	Araceae	Rhizome	23, 31-32
9.	<i>Actinopteris radiata</i> Sw. Link.	Morshikha	Actinopteridaceae	Whole plant	33
10.	<i>Alchornia floribunda</i> Mull. Arg.	Niando	Euphorbiaceae	Root	34
11.	<i>Allium tuberosum</i> Rottl	Chiense chive	Zingiberaceae	Seed	35-37
12.	<i>Allium sativum</i> L.	Garlic	Liliaceae	Bulb	23, 25, 38-43
13.	<i>Aloe excels</i> Berger	Zimbabwe Aloe	Asphodelaceae	Leaf	44
14.	<i>Alpinia galanga</i> Willd.	Java galangal	Zingiberaceae	Rhizome	23, 45
15.	<i>Asparagus racemosus</i> Willd.	Asparagus	Liliaceae	Root	23-24, 46-47
16.	<i>Bauhinia tomentosa</i> Linn.	Manja Mandaram	Caesalpiniaceae	Seed	23
17.	<i>Bauhinia vahlii</i> W.&A.	Camel's Foot climber	Caesalpiniaceae	Seed	23
18.	<i>Bauhinia variegata</i> Linn.	Bauhinia	Caesalpiniaceae	Bark	23
19.	<i>Benincasa hispida</i> (Thumb.) Cogn.	Ash gourd	Cucurbitaceae	Fruit	23
20.	<i>Bombax ceiba</i> Linn.	Silk-Cotton Tree	Bombacaceae	Bark	23
21.	<i>Boesenbergia rotunda</i> L.	Temu kunci	Zingiberaceae	Rhizome	48-50
22.	<i>Bussea occidentalis</i> Hutch	Kpayeli	Caesalpiniaceae	Bark, seed	51
23.	<i>Butea frondosa</i> Roxb.	Flame-of-the-forest	papilionaceae	Whole plant	23, 48
24.	<i>Cannabis indica</i> L.	Indian hemp	Cannabinaceae	Leaf	52
25.	<i>Capparis erythrocarpus</i> Isert.	Pitipiti	Capparidaceae	Root	53
26.	<i>Capsicum annum</i> L.	Capsicum	Solanaceae	Seed	54
27.	<i>Cassia occidentalis</i> Linn.	Kasondhi	Fabaceae	Leaf	55
28.	<i>Cassia sieberiana</i> DC	African laburnum	Caesalpiniaceae	Leaf	51
29.	<i>Chenopodium album</i> L.	White goosefoot	Chenopodiaceae	Seed	56-58
30.	<i>Chlorophytum tuberosum</i> Baker.	Safed musli	Liliaceae	Whole plant	51, 59

Sr. No.	Scientific name	Common name	Family	Part used	References
31.	<i>Cissus quadrangularis</i> Linn.	Edible stemmed vine (Dalziel)	Vitaceae	Root	23
32.	<i>Cocculus cardifolia</i> Linn.	Guduchi	Menispermaceae	Stem, leaf, Root	60
33.	<i>Cocos nucifera</i> Linn.	Coconut	Arecaceae	Endosperm	25, 38, 61
34.	<i>Cola acuminata</i> Schott.	Cola	Malvaceae	Seed	62
35.	<i>Cola caricaefolia</i> G.Don	Bumoguan	Sterculiaceae	Leaf	51
36.	<i>Cola gabonensis</i> Schott & Endl.	Kola nut	Sterculiaceae	Fruit	34
37.	<i>Cola nitida</i> Schott & Endl.	Kola nut	Sterculiaceae	Seed	34
38.	<i>Cola pachycarpa</i> Schott & Endl.	Kola nut	Sterculiaceae	Seed	34
39.	<i>Cola rostrata</i> Schott & Endl.	Kola nut	Sterculiaceae	Seed	34
40.	<i>Commiphora caudata</i> Wt. & Arn.	Emporium of medicinal plants	Burseraceae	Root, leaf	23
41.	<i>Commiphora mukul</i> Hook. ex Stocks	Indian bdellium tree	Burseraceae	Root, leaf	23
42.	<i>Coriandrum sativum</i> Linn.	Coriander	Apiaceae	Leaf	56
43.	<i>Corynanthe pachycerus</i> K Schum.	Ivory coast	Rubiaceae	Stem, Bark	53
44.	<i>Crocus sativus</i> Linn.	Saffaron	Iridaceae	Stigma	35
45.	<i>Curculigo orchoides</i> Gaertn.	Musali	Hypoxidaceae/ Amaryllidaceae	Rhizome	23-24, 55, 63-64
46.	<i>Curcuma amada</i> Roxb.	Mango ginger	Zingiberaceae	Rhizome	23-24
47.	<i>Cucurbita pepo</i> L.	Pumpkin	Cucurbitaceae	Seed	23
48.	<i>Cymbopogon citrates</i> (DC.) Stapf	Lemongrass	Poaceae	Whole plant	23
49.	<i>Dactylorhiza hatagirea</i> (D. Don) Soo.	Marsh Orchis	Orchidaceae	Root	30, 48, 65-66
50.	<i>Dalbergia sissoo</i> Roxb.	Shisham	Fabaceae	Wood	55-56
51.	<i>Daucus carota</i> L.	Carrot	Umbelliferae	Root	67
52.	<i>Desmodium gangeticum</i> (Linn.) DC.	Desmodium	Fabaceae (Papilionaceae)	Root	23
53.	<i>Dioscorea bulbifera</i> Linn.	Wild Yam	Dioscoreaceae;	Whole plant	55
54.	<i>Diospyros melanoxylon</i> Roxb.	East Indian ebony	Ebenaceae	Flower	23, 55
55.	<i>Drypetes roxburghii</i> (Wall.) Huru.	Putjev	Euphorbiaceae	Leaf juice	55
56.	<i>Durio Zibenthinus</i> Murr.	Durian Fruit	Bombacaceae	Fresh fruit	35, 68
57.	<i>Echinacea purpurea</i> L.	Indian head, comb flower	Compositae	Leave	69
58.	<i>Ekerbegia capensis</i> Sparrm.	Isongoroit	Meliaceae	Root	44
59.	<i>Emblica officinalis</i> Gaertn.	Emblic	Euphorbiaceae	Fruit	70-71
60.	<i>Eriodendron Anfractuosum</i> DC.	White silk cotton tree	Bombaceae	Whole plant	60
61.	<i>Euadenia eminens</i> Hook.f.	Dinsinkro	Capparidaceae	Root	53
62.	<i>Euphorbia hirta</i> L.	Dudhi	Euphorbiaceae	Leave	23, 51
63.	<i>Eurycoma longifolia</i> Jack	Tongkat Ali	Simarubaceae	Whole plant	35, 72-82
64.	<i>Fadogia agrestis</i> Schweinf. Ex Heim	Black aphrodisiac	Rubiaceae	Stem	35, 83-84
65.	<i>Ficus religiosa</i> Linn.	Peepal tree	Moraceae	Bark	23

Sr. No.	Scientific name	Common name	Family	Part used	References
66.	<i>Flueggea virosa</i> Roxb. ex Willd.	White-berry bush	Euphorbiaceae	Whole plant	62
67.	<i>Garcinia afzelii</i> Engl	Bitter kola	Guttiferae	Bark	51
68.	<i>Garcinia kola</i> Heckel	Bitter kola	Guttiferae	Leaf, seed	51
69.	<i>Glycyrrhiza glabra</i> Linn.	Liquorice	Papilionaceae	Root	23
70.	<i>Gmelina arborea</i> Roxb.	Coomb teak	Verbenaceae	Fruit	23
71.	<i>Grewia asiatica</i> L.	Phalsa	Tiliaceae	Fruit	56
72.	<i>Harissonia abyssinica</i> Oliv	Zigua	Simaroubaceae	Bark	51
73.	<i>Hibiscus rosa-sinesis</i>	China rose	Malvaceae	Leaf	23
74.	<i>Hibiscus sabdariffa</i> Linn.	Roselle	Malvaceae	Seed, leaf	23
75.	<i>Holostemma ada-kodien</i> Schult.	Holostemma	Asclepiadaceae	Root	23
76.	<i>Hygrophila schulli</i> (Ham.)M. R. & S. M. Almeida	Marsh Barbel	Acanthaceae	Root, leaf, Seed	23
77.	<i>Ipomoea mauritiana</i> Jacq.	Giant potato	Convolvulaceae	Root	23
78.	<i>Lagenaria vulgaris</i> Ser.	Bottle gourd	Cucurbitaceae	Fruit	23
79.	<i>Landolphia dulcis</i> (Sabine) Pichon	Hama-fufu	Apocynaceae	Root, Bark	53
80.	<i>Lepidium meyenii</i> Walp.	Maca	Brassicaceae	Root	35, 85-87
81.	<i>Mangifera indica</i> L.	Mango	Anacardiaceae	Bark	23
82.	<i>Maranta arundinacea</i> Linn.	Arrowroot	Zingiberaceae	Rhizome	23
83.	<i>Mezoneuron benthamianum</i> Baill	Senegal	Caesalpiniaceae	Twig or Stem	51
84.	<i>Mimosa pudica</i> L.	Thottasiniki	Mimosoideae	Aerial part	88
85.	<i>Mirabilis jalapa</i> L.	Four o' clock plant	Nyctaginaceae	Root	71
86.	<i>Momordica charantia</i> Descourt.	Bitter Melon	Cucurbitaceae	Leaf	89
87.	<i>Mondia whitei</i> Linn.	White's ginger, tonic root	Periplocaceae	Root	35, 44, 90-91
88.	<i>Montanoa tomentosa</i> Cerv.	Zoapatle	Asteraceae	Whole plant	35, 92
89.	<i>Mucuna pruriens</i> Linn. DC.	Poonai kali	Fabaceae	Seed, pod	55, 64
90.	<i>Myristica fragrans</i> Houtt.	Nutmeg	Myristicaceae	Seed	35,93
91.	<i>Nerium indicum</i> Mill.	Kaner/Kanail	Apocynaceae	Roots	55
92.	<i>Oxyanthus unilocularis</i> Hiern	Ghana akan	Rubiaceae	Fruit, leaf	51
93.	<i>Palisota hirsta</i> K. Schum.	Ghana	Commelinaceae	Leaf	35, 94
94.	<i>Passiflora incarnate</i> L.	Wild Passion Flower	Passifloraceae	Leaf	35, 95
95.	<i>Papaver somniferum</i> L.	Poppy plant	Papaveraceae	Flower	23
96.	<i>Pausinystalia yohimbe</i> (K.Schum.) Pierre	Yohimbin	Rubiaceae	Bark	96
97.	<i>Piper guineense</i> Schumach. & Thonn.	West African Pepper	Piperaceae	Root	53
98.	<i>Piper officinarum</i> DC	Chavica officinarum	Piperaceae	Fruit	23
99.	<i>Piper betle</i> Linn.	Vettrilai	Piperaceae	Leaf	88
100.	<i>Polyalthia suaveolens</i> Engl. & Diels	Polyalthia	Annonaceae	Fruit, root, leaf	34, 97
101.	<i>Polygonatum multiflorum</i> (L.) All	Solomon's Seal	Liliaceae	Root	30
102.	<i>Rauvolfia vomitoria</i> Afzel.	poison devil's pepper	Apocynaceae	Root	98-99
103.	<i>Rhododendron anthopogon</i> D. Don	Ballu	Ericaceae	Leaf, flower	30
104.	<i>Rhododendron lepidotum</i> Wall. ex D. Don	Snow Rose	Ericaceae	Leaf, flower	30
105.	<i>Ricinus communis</i> L.	Castor	Euphorbiaceae	Seed	23

Sr. No.	Scientific name	Common name	Family	Part used	References
106.	<i>Rosa damascena</i> Mill	Rose	Rosaceae	Petal	100
107.	<i>Saccharum spontaneum</i> Linn.	Kasa	Poaceae	Root stock	25, 38
108.	<i>Santalum album</i> Linn.	Sandalwood	Santalaceae	Heart wood	100
109.	<i>Scindapsus officinalis</i> Schtt.	Gajapipali	Arecaceae	Fruit	25, 38
110.	<i>Securidaca longepedunculata</i> Slash	Violet tree	Polygalaceae	Root bark	35
111.	<i>Sesamum indicum</i> Linn.	Tilli / Til	Pedaliaceae	Seed	55
112.	<i>Sida cordifolia</i> Linn.	Country-mallow	Malvaceae	Root, seed	23
113.	<i>Solanum indicum</i> Linn.	Indian night Shade	Solanaceae	Root	23
114.	<i>Solanum melongena</i> Linn.	Brinjal	Solanaceae	Unripe fruit	23
115.	<i>Solanum nigrum</i> L.	Aguaragua	Solanaceae	Berries	23
116.	<i>Sphaeranthus africanus</i> Linn.	Botobotonisan	Asteraceae	Whole plant	23
117.	<i>Stereospermum suaveolens</i> DC.	Atkapali	Bignoniaceae	Root, bark, flower	23, 101
118.	<i>Strychnos nux-vomica</i> Linn.	Strychnine tree	Loganiaceae	Seed	23
119.	<i>Syzygium aromaticum</i> (L.) Merrill & Perry	Clove	Myrtaceae	Dried flower Bud	35, 102-103
120.	<i>Tabernanthe iboga</i> (L.) Nutt.	Iboga	Apocynaceae	Root, stem, bark	34, 104
121.	<i>Tabernanthe manii</i> Baill.	Tabernanthe	Apocynaceae	Root	34, 104
122.	<i>Tamarindus indica</i> L.	Tamarind	Fabaceae	Bark	105
123.	<i>Tamarix aphylla</i> (L.) Karst	Athel tamarisk	Tamariaceae	Bark	56
124.	<i>Taxus baccata</i> Linn.	Birmi	Taxaceae	Leaf	23, 25
125.	<i>Terminalia arjuna</i> Roxb. ex DC	Arjuna	Combretaceae	Bark	23
126.	<i>Tinospora cordifolia</i> (Willd) Miers Hk.	Tinospora	Menispermaceae	Whole plant	23-24
127.	<i>Tribulus terrestris</i> L.	Puncturevine	Zygophyllaceae	Seed, fruit	35,106-110
128.	<i>Trichosanthes dioica</i> Roxb.	Wild snake-gourd	Cucurbitaceae	Flower, fruit	23
129.	<i>Trichosanthes dioica</i> L.	Methi	Fabaceae	Seed	23
130.	<i>Turrea heterophylla</i> Sm.	Ahunanyakwa	Meliaceae	Root, bark, Seed	53
131.	<i>Tynanthus panurensis</i> (Bur.) Sandw.	Clavo huasca	Bignoniaceae	Bark, wood	111-112
132.	<i>Vanda tessellata</i> (Roxb.) Hook. ex Don.	Rasna	Orchidaceae	Root, flower	35, 113-114
133.	<i>Valeriana jatamansi</i> Wall.	Jatamansi	Valerianaceae	Root	115
134.	<i>Withania somnifera</i> Linn.	Indian Ginseng	Solanaceae	Root, Leaf	23, 55-56, 64
135.	<i>Wrightia tinctoria</i> (Roxb.) R. Br.	Ivory tree	Apocynaceae	Leaf, bark, Seed	23
136.	<i>Zingiber officinale</i> Roscoe	Gingembre	Zingeberaceae	Rhizome	62

CONCLUSION

Current world-wide interest in traditional medicine has led to rapid development and studies of many remedies employed by various ethnic groups of the world. The information is recorded in plant's scientific name, common name of plant, family, part used for the aphrodisiac activity & reference. Scientists from divergent fields are investigating new plants with an eye to their aphrodisiac usefulness. A sense of urgency accompanies the search as the pace of species extinction continues. More of these plants should be subjected to animal and

human studies to determine their effectiveness in whole organism systems.

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