REVIEW ON NATURAL APHRODISIAC POTENTIALS TO TREAT SEXUAL DYSFUNCTION

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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. This review will discuss the current research done on the most popular natural aphrodisiacs and examine the weight of evidence to support the use of any of these substances to enhance sexual desire and function. A variety of natural aphrodisiac potentials are known to have a potential effect on the sexual functions, supporting older claims and offering new hopes. The available synthetic drugs and treatments have limited efficacy, unpleasant side effects and contraindications in certain disease conditions. The present review, describes the detail information about the major constituents and their medicinal importance found in naturally occurring plants, which are helpful to further development of pharmaceutical formulations.

Key Words: Erectile dysfunction, Male impotence, Aphrodisiac potentials, Herbal drugs.

INTRODUCTION
Sexual relationships are some of the most important social and biological relationship in human life. Male impotence also called Erectile dysfunction (ED) is a common medical condition that affects the sexual life of millions of men worldwide (Montorsi et al., 2003; Shab Singh et al., 2003). 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 medial and social symptom that occurs in 10-52% of men and 25-63% of women (Porst-2004). It is the repeated inability to achieve normal sexual intercourse male impotence (or) erectile dysfunction is a significant problem that may contribute to infertility (Yakubo et al., 2003) function decreases spontaneously with advanced aging. It occurs commonly in middle aged and older men. Erectile dysfunction is adversely affected by diabetes mellitus, antihypertensive, antipsychotic, antidepressant therapeutic drugs. Organic causes of erectile dysfunction like Hypogonadism, hyperprolactinemia, and neurological disorders. (Mendoza-Lujambio et al., 2008). Treatment of ED involves several natural aphrodisiac potentials. Aphrodisiac is described as any substance that enhances sexual pleasure (Guay et al., 2003; Rosen et al., 1993). Sexual dysfunction caused by various factors such as psychological disorders like Anxiety, depression, stress, fear of sex, neurological disorders, stroke, cerebral
nitric oxide (NO) gas. The gas diffuses into smooth
methods of correcting defective semen and sexual
infertility, spermatogenesis, semenogenesis reprodu ction,
famines of the axons of parasympathetic nerves rele ase
Mechanism involved in Aphrodisiac potentials
Aphrodisiac potentials inhibit the hydrolyzing acti on of
phosphodiesterase type-5 enzyme (PDE-5) into inacti ve
leading to dilation and increased flux of blood int o the
causes the smooth muscle cells around the penis to relax,
cyclic guanosine mono phosphate (GMP) release with in
penile smooth cells (Montorsi et al., 2006; Wespes et al.,
2006).
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
penis (Segraves et al., 2003). But side effects with this
drug are headache, flushing, dyspepsia and nasal
congestion are reported with this treatment (Lue, et al
2003).
The importance of sexuality in human life is well
recognized in the ancient Indian medicine ayurveda as an
entire specialty is devoted to it under the name ‘Vijakarna’ or virilification therapy. Vajakarna therapy
includes aphrodisiacs for erectile dysfunction, causes of
infertility, spermatogenesis, semenogenesis reproduction,
methods of correcting defective semen and sexual
satisfaction (Sharma et al., 1990).
Mechanism involved in Aphrodisiac potentials
On sexual stimulation (visual (or) otherwise the
famines 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 erection (Palmer – 1999). The erection
cesses 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 flow (Chew et al., 2000).
Since many people are now relying on herbal
medicines for health care (Griffin et al., 1998). In
ayurveda, the following plants that have on aphrodisiac
effect. These include Myristica fragrans Houtt
(Myristicaceae), Fadogia agrestis (Rubiacae), Allium
tuberosum (Zingiberaceae crocus sativus L. (Iridaceae).
Palisota Hirsuta (Commelinaeace) Moniaivhiteion,
(Periplacaceae), passiflora incarnatal (Passifloraceae),
Boesen berrigia rotunda L. (Zingiberaceae), Eurycoma
longifolia (Simarabaceae), Lepidium myenii
(Brassicaceae), Montanoa tomentosa: Securidaca
longepadunculata (Poligalaceae), Duriozibentihs L
(Bombacaceae) Dactylorhiza hatagirea (Orchiadaceae),
securidaca longepadunculata (Polyganaceae), suzygium
aromaticum L. (Myrtaceae), Vanda tessellata, Butea
frondosa (Papilionaceae), Fodgia agrestis (Rubiacae).
1. Crocus Sativus
Crocus sativus L., commonly known as saffron, is a Perennial stemless herb of iridaceae family that is
widely cultivated in Iran and other countries, including
India and Greece (Rios et al., 1996). In traditional
medicine, saffron is recommended an aphrodisiac agent
(Madan et al., 1966). Thus in this study the effects of
saffron stigma extract and two active constituents, crocin
and safranal, on sexual behaviors were evaluated in male
rats. The aqueous extract of C. Sativus and crocin can be
considered to have aphrodisiac properties (Hosseinzadeh
et al., 2008).
2. Allium tuberosum
Allium tuberosum since Ancient times have been
used as food, spices and herbal remedies. It is rich source
of steroidal saponins, alkaloids, as well as sulfur
containing compounds (Hostettmann, et al., 1995). In
China it seeds have been reputedly used as a traditional
Chinese medicine. For treating both impotence and
crocin and safranal, on sexual behaviors were evaluated in male
rats. The aqueous extract of C. Sativus and crocin can be
considered to have aphrodisiac properties (Hosseinzadeh
et al., 2008).
3. Eurycoma Longifolia
Eurycoma longifolia jack (Simarubacae) is a
small tree that has been used as a medicinal herb for
countries in south East Asia. In Malaysia, the plant is
traditionally used as an aphrodisiac. Recent studies
conducted in rats confirmed the sexual enhancing
proportion of this plant (Ang et al., 2000). Over the years,
this plant has been shown to exhibit antimalarial (Hooi
Hoon Ang et al., 1998) antiulcer and antipyretic activities.
(Ang et al., 2000). The test extract was prepared from the
roots of the plant. This plant suggests that it may be
effective in human HSDD (Hypo active sexual desire
disorder) finally , Eurycoma longifolia found to be an
aphrodisiac effect as evidence by the enhanced sexual orientation (Ang & Lee et al., 2002).

4. Mondia whitei

Mondia whitei belongs to periplocaceae family. Barks of the roots of Mondia whitei, have been used since a pretty long time as an aphrodisiac agent alone or in combination with ingredients such as roots of Albizia antunesiana Harms (Mimosaceae) and Stem-bark of Ozoroa insigni del (Anarcadiaceae) (Noumi et al., 1998; Carpentier et al., 2004). The aqueous and hexane extracts from the dried roots of Mondia whitei shows sexual enhancement, in experienced male rats (Watcho et al., 2004).

5. Boesenbergia Rotunda

Boesenbergia rotunda (L) in Tailand, they are also used as a folk medicine for health promotion antiflatulence, stomach discomfort, diuresis. Leucorrhrea treatment of oral diseases and anti dysentery (Hemhonga et al., 1998). It long been used among Thai men for sexual enhancement by using it as an ingredient of traditional remedies for impotency sexual enhancing herb (Theingburanatham et al., 1995, Wutythamawech et al., 2000, Deewiset, 1999). The chemical constituents present in it are 1, 5-cineole, Boesenbergin A, dl-Pinostrobin, dl-Pineol, linalool, 1, 4, 4’ – trihydroxyhydrochalcone and Uvangoletin (Cheen pracha et al., 2006). In addition to the purposes of primary health care, the rhizomes have been reported as having aphrodisiac properties (Theingburanatham et al., 1995, Wutythamawech et al., 2000, Deewiset, 1999). It has long been used among Thai men for sexual enhancement by using it as an ingredient of traditional remedies for impotency. (Paiwan Sudwan et al., 2007).

6. Myristica fragans: (Myristicaceae)

Myristica fragrans Houtt (nutmeg) has been mentioned in Unani medicine to be of value in the management of, male sexual disorder due to the presence of sterols, phenols, alkaloids and amino acids. The suspension of the extract shows resultant significant and sustained increase in the sexual without any adverse effects. (Tajuddin et al., 2005). The 50% ethanolic extract of nutmeg possess aphrodisiac activity. Thus it provides a scientific rationale for the traditional use of nutmeg in the management of male sexual disorders.

7. Lepidium Mayeni

Lepidium mayenii (Maca) is Peruvian hypocotyls which belongs to, Brassicaceae family and is traditionally employed in the Andean region for its supposed aphrodisiac and fertility enhancing properties. Multiple regression analysis showed that serum testosterone levels were not affected by treatment with Maca (Gonzales et al., 2001). The aphrodisiac properties of the root of Lepidium mayenii (Maca) have recently been described (Zheng et al., 2003). Additionally, a favorable effect on spermatogenesis has been observed in for both, adult male rats and adult men (Gonzales et al., 2001).

8. Passiflora incarnata

Linneas (Passiflaraceae) is a fast growing perennial vine and has been used mainly as an anxiolytic, sedative, anti convulsant and analgesic in traditional system of therapeutics in many countries. The methanolic extract Passiflora incarnata leaves shows aphrodisiac effect (Dhawan et al., 2003).

9. Securidaca Longepedunculata

It (Fresen) beedings to Polygalaceae. Found in vanda are used to treat erectile dysfunction. Securidaca longepedunculata s used as a general remedy for several other ailments such as cough,cold,fever,body ache,tooth ache,veneral disorders,malaria,th,infllamation,ulcers and pneumonia(Galeffi et al.,1990),The plant is having profound knowledge of traditional medicine,which can possibly be harvested for the treatment of sexual impotency. The chloroform and ethonolic extract of root bark of Securidaca longepedunculata can deal successfully with erectile dysfunction (Rakuambo et al., 2006).

10. Montanoa tomentosa

Montanoa tomentosa have an extensive ethnomedical history of use as a traditional remedy for reproductive impairments. M. to aqueous crude extract has been used for the last 5 centuries for the induction of labor, regulation of fertility, treatment of postpartum bleeding problems and to induce menses (Gallegos et al., 1983 , southam et al., 1983);This plant has been described to possess anti pregnancy activity in women. The aqueous extract of the leaves is administered orally during early stage of pregnancy (Hahn et al., 1981). The aqueous Montanoa tomentosa used are traditional remedy posses aphrodisiac properties.

11. Dactylorhiza hatagirea

Dactylorhiza hatagirea (D. don) belongs to Orchidacea family. Which are synonymous to the tubers of orchis macula (orchidaceae) and serve as source of salep, are used traditionally in Indian subcontinent especially in northern region and Nepal are aphrodisiac and sexual stimulant. It is also considered as an alternative source of salep used very commonly in Europe (Bhattarain et al., 1996), lyophilized aqueous extract of roots was studied for effect on sexual behavior and spermatogenesis in male albino rats It is considered as an important aphrodisiac plant in Ayurvedic, unani literature and is employed to enhance performance as well as to increase vigor and utality (Bhattarain et al., 1996).
12. Durio, Zibethinus

Durio, Zibethinus Linn belongs to the Bombacaceae family. The family Bombacaceae is best known for stowy flowers and woody or thin-shelled pods filled with small seeds and silky or cotton like fiber. The durian, *Durio zibethinus* L., is one member that differs radically in having large seeds. Surrounded by fleshy arils, β-galactosidase was isolated from (Tanboly, 2001), forty-three sulphur containing constituents were found. It contains esters, sulphur containing compound, ketones, alcohols (Wong & Tie., 2006) and ethyl-2methyl butanoate was found to have highest odour impact among the non-sulfurous odourants in durain (Weenen et al., 1996). Traditionally the fruits of *Durio zibethinus* are being used by people all over the world for their fertility enhancing activity. The pet ether extract of *Durio zibethinus* shows significant aphrodisiac activity (Venkatesh et al., 2009).

13. Fadogia agrestis (Rubiaceae)

This plant is used to modify sexual functions, in animals, especially those arising from hypotesteronemia. Phytochemical screening of the aqueous extract of *Fadogia agrestis* stem showed the presence of alkaloids and saponins, while anthraquinones and flavonoids are present in small amount. Saponins have been implicated as possible bioactive agent responsible for the Aphrodisiac effect in *Tribulus terrestris* extract (Gauthaman et al., 2002). The prolonged ejaculatory latency indicates enhancement of sexual function and suggests an aphrodisiac action male rats were orally dosed with 18mg/kg, 50mg/kg and 100mg/kg body weight, respectively, of the extract at 24hr intervals and their sexual behavior parameters and serum testosterone concentrations were evaluated at days 1, 3 and 5 (Yakubo et al., 2005). There was also a significant increase in serum testosterone concentration in all groups of tested animals (Yakubo et al., 2005). So, it may be used to modify impaired sexual functions in animals especially those arising from hypotesteronemia.

14. Butea frondosa (Papilionaceae)

It is reported to possess antistress, hepatoprotective, antistrogenic, ocular inflammatory and antihelminthic activities. *Butea frondosa* is also claimed to possess aphrodisiac, expectorant, emmenagogue, diuretic and astringent properties. These claims are based largely on subjective opinion rather than scientific observation (Ramachandran et al., 2004).

15. Vanda tessellata

Although orchids are being cultivated and valued, mainly for ornamental purposes, some of them are used from time immemorial in traditional practices to treat various medical conditions. One among them is *V. tessellate* (Roxb) Hook exbon. This is an epiphytic orchid which is found in many part of India (including Western Ghats), Sri Lanka and Burma. This plant has been used in the indigenous medicine such as Ayurvedic local traditional medical practices (Chopra et al., 1965). The leaf juice is used for treatment of certain inflammatory conditions. The leaves in the form of a paste are applied to the body to bring down fever (Basu et al., 1971). The roots are used in rheumatism, nervous problems, bronchitis, dyspepsia and fever (Kirtikar, 1978). This plant root is reported to contain an alkyl perulate and β-sistosterol-D-glucoside. The dried whole herb also contains long chain alkanes and alkanol sistosterol, resin, saponins, tannins, fatty acids, colouring agents (Das et al., 1967, Prasad et al., 1968). The aqueous or alcoholic extract of *V-tessellata* shows aphrodisiac activity (Suresh Kumar et al., 2000).

16. Palisota Hirsuta (Commelinaceae)

It is a traditional herbal medicine in cote ‘d’ Ivoire. Total flavanoids are extracted from leaves of *palisota Hirsuta Thunb.K Schum*. These plants contain secondary metabolites of which the flavonoids, occupy a place of choice in modern medicine (Drewes et al., 2002). The plant possesses aphrodisiac activity by the assessment of sexual stimulant properties among the male rats. The total flavonoids extracted from *Palisota hirsuta* leaves possess the aphrodisiac property (Boua Boua Benson et al., 2008).

17. Syzygium aromaticum

Clove is the dried flower bud of *syzygium aromaticum* (L) Merr and Perry belongs to the family (Myrtaceae). It is an evergreen three 10-20m in height indigenous to India, Indinesia, Zanzibar, Mauritius and Sri Lanka (Treas & Evans, 1972). It is one of the most important drugs used in indigenous medicine in India, especially in Unani medicine. Clove is reported to have as aphrodisiac (Treas and Evans, 1972). Phytochemical studies indicate that the clove containes free eugenol, eugenol acetate, caryophyllene, sesquenterpene ester, phenyl prop anoid, β-caryophyllene, Eugenol and acetyl eugenol (Rastogi et al., 1984, Miyazawa et al., 2003, Gherardi et al., 2001, Srivastava et al., 1993). The results indicated that the 50% ethanolic extract of clove produced a significant and sustained increase in sexual activity of male rats. Thus, the resultant aphrodisiac activity of the extract lends support to the claim for its traditional usage in sexual disorders (Tajuddin et al., 2004).
List of plants having aphrodisiac potentials

<table>
<thead>
<tr>
<th></th>
<th>Plant</th>
<th>Part used</th>
<th>Extract</th>
<th>Chemical constituents</th>
<th>Traditional uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Crocossativus (iridaceae)</td>
<td>Stigma</td>
<td>Aqueous extract</td>
<td>Safranal and crocin</td>
<td>Aphrodisiac agent</td>
</tr>
<tr>
<td>2</td>
<td>Alliumtuberoum (Zingiberaceae)</td>
<td>Seeds</td>
<td>n. butanol extract</td>
<td>Steroidal saponins and alkaloids</td>
<td>Aphrodisiac agent</td>
</tr>
<tr>
<td>3</td>
<td>Palisota hirusta (Commenlinaeae)</td>
<td>Leaves</td>
<td>Aqueous extract</td>
<td>Flavanoids</td>
<td>Aphrodisiac property</td>
</tr>
<tr>
<td>4</td>
<td>Eurycoma longifolia (Simurubaceae)</td>
<td>Whole plant</td>
<td>Chloroform and aqueous extract</td>
<td>Quassinoids, squalene derivatives, biphenylnelignans, triterpenes, conhine-6-one and 1-carboline alkaloids.</td>
<td>Aphrodisiac agent&lt;br&gt; Also effective in human HSDD, (Hypoactive sexual desire disorder) antimalarial antilucer, antipyretic.</td>
</tr>
<tr>
<td>5</td>
<td>Mondia whiteion (Periplocaceae)</td>
<td>Roots</td>
<td>Aqueous and Hexane extracts</td>
<td>Steroids triterpenes, aldehydes.</td>
<td>Aphrodisiac agent</td>
</tr>
<tr>
<td>6</td>
<td>Boesenbergia rotunda (Zingeberaceae)</td>
<td>Rhizomes</td>
<td>Ethanollic extract</td>
<td>Flavonoids Boesenberga A, Chromene, Panduratin C&amp; A, Chalcones.</td>
<td>Aphrodisiac agent&lt;br&gt; Also used as antiflatulence, stomach discomfort, antidysentry, diuresis, treatment of oral disease etc.,</td>
</tr>
<tr>
<td>7</td>
<td>Myristica fragrans (myristicaceae)</td>
<td>Seeds</td>
<td>50% Ethanoic extract</td>
<td>Sterols, phenols, alkaloids, aminoacids.</td>
<td>Aphrodisiac agent&lt;br&gt; Also used as analgesic, anti inflammatory and anti diarrheal.</td>
</tr>
<tr>
<td>8</td>
<td>Lepidium meyenii (Brassicaceae)</td>
<td>Root</td>
<td>Alcoholic extract</td>
<td>Macaene and Macamide, multi saturated fattyacids, and amides.</td>
<td>Fertility enhancer and aphrodisiac agent.</td>
</tr>
<tr>
<td>9</td>
<td>Passiflora incarnata (Passifloraceae)</td>
<td>Leaves</td>
<td>Methanolic extract</td>
<td>Bioactive benzoflavone compound (BZF)</td>
<td>Aphrodisiac effects anxioylic sedative, anti convulsant.</td>
</tr>
<tr>
<td>10</td>
<td>Securidaca longepedunculata (Polygalaceae)</td>
<td>Root bark</td>
<td>Chloroform</td>
<td>1, 7-dimethery 2- Hydroxy Xanthone</td>
<td>Treats erectile dysfunction.  Also used to treat cough, cold, fever, bodyache, toothache, malaria, venereal disease, TB, inflammation, Ulcer and pneumonia.</td>
</tr>
<tr>
<td>No.</td>
<td>Species</td>
<td>Part Used</td>
<td>Extract Type</td>
<td>Active Constituents</td>
<td>Properties</td>
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</tr>
<tr>
<td>11</td>
<td><em>Montanoa tomentosa</em></td>
<td>Whole plant</td>
<td>Aqueous extract</td>
<td>Diterpenes such as, montanol, and zoapatanol.</td>
<td>Aphrodisiac property.</td>
</tr>
<tr>
<td>12</td>
<td><em>Dactylorhiza hatagirea</em></td>
<td>Roots</td>
<td>Aqueous</td>
<td>Steroids</td>
<td>Aphrodisiac activity, Nutritive and restorative tonic.</td>
</tr>
<tr>
<td>14</td>
<td><em>Fadogia agrestis</em></td>
<td>Stem</td>
<td>Aqueous extract</td>
<td>Alkaloids and saponins, anthrquinones and flavonoids.</td>
<td>Aphrodisiac activity used in hypotestoste onemia.</td>
</tr>
<tr>
<td>15</td>
<td><em>Butea frondosa</em></td>
<td>Whole plant</td>
<td>Aqueous extract</td>
<td>----</td>
<td>Aphrodisiac activity.</td>
</tr>
<tr>
<td></td>
<td><em>(papilionaceae)</em></td>
<td></td>
<td></td>
<td></td>
<td>Also used as antistress activity, hepato protective, anti estrogenic, anti-inflammatory, and anti helminthic activities.</td>
</tr>
<tr>
<td>16</td>
<td><em>Vanda tessellata</em></td>
<td>Root, flower</td>
<td>Alcohol (or) aqueous extract</td>
<td>Alkyl perulate and β-sitosterol D glucoside, alkanes, alkanol, sitosterol, resins, fattyacids, colouring agents.</td>
<td>Aphrodisiac activity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Also used in rheumatism, nervous problems, bronchitis, dyspepsia, fever.</td>
</tr>
<tr>
<td>17</td>
<td><em>Syzygium aromaticum</em></td>
<td>Dried flower buds</td>
<td>50% ethanolic extract</td>
<td>Eugenol, eugenolacetate, caryophellene, acetyl eugenol, sesquiterpene ester, phenyl propanoid.</td>
<td>Aphrodisiac agent.</td>
</tr>
<tr>
<td></td>
<td><em>(Myrtaceae)</em></td>
<td></td>
<td></td>
<td></td>
<td>Also used as stomachic, carminative, antispasmodic, cataract, anti carcinogenic property, inhibits platelet aggregation, posses antiviral activity.</td>
</tr>
</tbody>
</table>

**CONCLUSION**

This review focuses on several natural Aphrodisiac potentials. Erectile dysfunction is defined as the inability of a man to achieve and maintain on erection. Aphrodisiac can therefore be described as any substance that enhances sex drive and (or) sexual pleasure. Aphrodisiac are used to improve the sexual behavior and performance. This study validates the effectiveness of herb in improving as well as preventing the functionality of sexual organ, several natural aphrodisiacs like *Allium tuberosum*, *crocus sativus*, *mondia whiteion*, *Boesenbergio rotunda*, *Myristicafragrans*, *Palisota hirusta* etc., are being nominated as herbal cure for sexual dysfunction. Several medicinal plants are used in ayurvedic formulations as aphrodisiac potentials to enhance performance as well as to increase vigor and vitality under several researcher studies in current trend.
REFERENCES


