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Review Article

Sexual Dysfunction: An Overview and Medicinal Plant used for treatment of Sexual dysfunction

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ABSTRACT

Sexual dysfunction (SD) or male impotence is defined as the inability to have or sustain an erection long enough to have a meaningful sexual intercourse. SD tends to occur gradually until the night time or early morning erections cease altogether or are so flaccid that successful intercourse does not occur. Sexual health is an important determinant of quality of life. Today, millions of men, young and old, suffer from SD due to high levels of synthetic hormones known as Xenoestrogens in our diet/environment; nutritionally imbalanced diet resulting from poor quality of produces; and extremely low levels of testosterone. In this oral drugs sildenafil citrate, vardenfil, tadalafil, alprostadil, phenotolamine injections are mainly inhibiting the PDE5 and enhancing the penile erection and non pharmacological therapies vaccum therapy, surgery (penile prosthesis), counseling also shows role in SD treatment, currently herbal medicines are shows prominent role in SD patients. To overcome the problem of sexual (or) ED various natural aphrodisiac potentials are preferred. The present review discusses about aphrodisiac potential of plants, its biological source, common name, part used and references, which are helpful for researchers to develop new aphrodisiac formulations.

Keywords: Aphrodisiac, Sexual dysfunction, Phosphodiesterease, herbal drugs.

INTRODUCTION

Sexual dysfunction (SD or ED; Erectile dysfunction; or impotence) and premature ejaculation (PE) are the two most prevalent complaints in male sexual dysfunction. Male sexual dysfunction can be caused by physical or psychological problems. Sexual dysfunction is defined as a difficulty in initiating or maintaining penile erection adequate for sexual relations. A cause of this type of impotency includes psychological, neurological, hormonal, and vascular pathologies, or combinations of these factors and also some diseases, disorders or their treatment means drug induction. There are many treatment strategies of sexual dysfunction. One of the novel strategies is use of aphrodisiac herbs. An aphrodisiac is defined as any substance or activity that arouses sexual interest and desire, increases pleasure and performance. The word 'Aphrodisiac' is derived from 'Aphrodite', the Greek goddess of love and most of these substances are derived from plants. Two main types of aphrodisiacs are psycho physiological stimuli (visual, tactile, olfactory and aural) preparations and internal preparations (food, alcoholic drinks and love portions). Management options of Male Sexual Dysfunction include psychological/behavioral therapy with a trained counselor aimed at helping

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people to address feelings of anxiety, fear and guilt that may have an impact on sexual function; drug therapy that is use of testosterone replacement therapy for cases of androgen insufficiency and other pharmacological agents; non surgical devices which include vacuum pump (expands the penis and reduces pressure within the cavernous sinusoidal space) and constrictive rings [1]. Fig.1-3 indicates causes of Sexual/erectile dysfunction and its pathogencity.

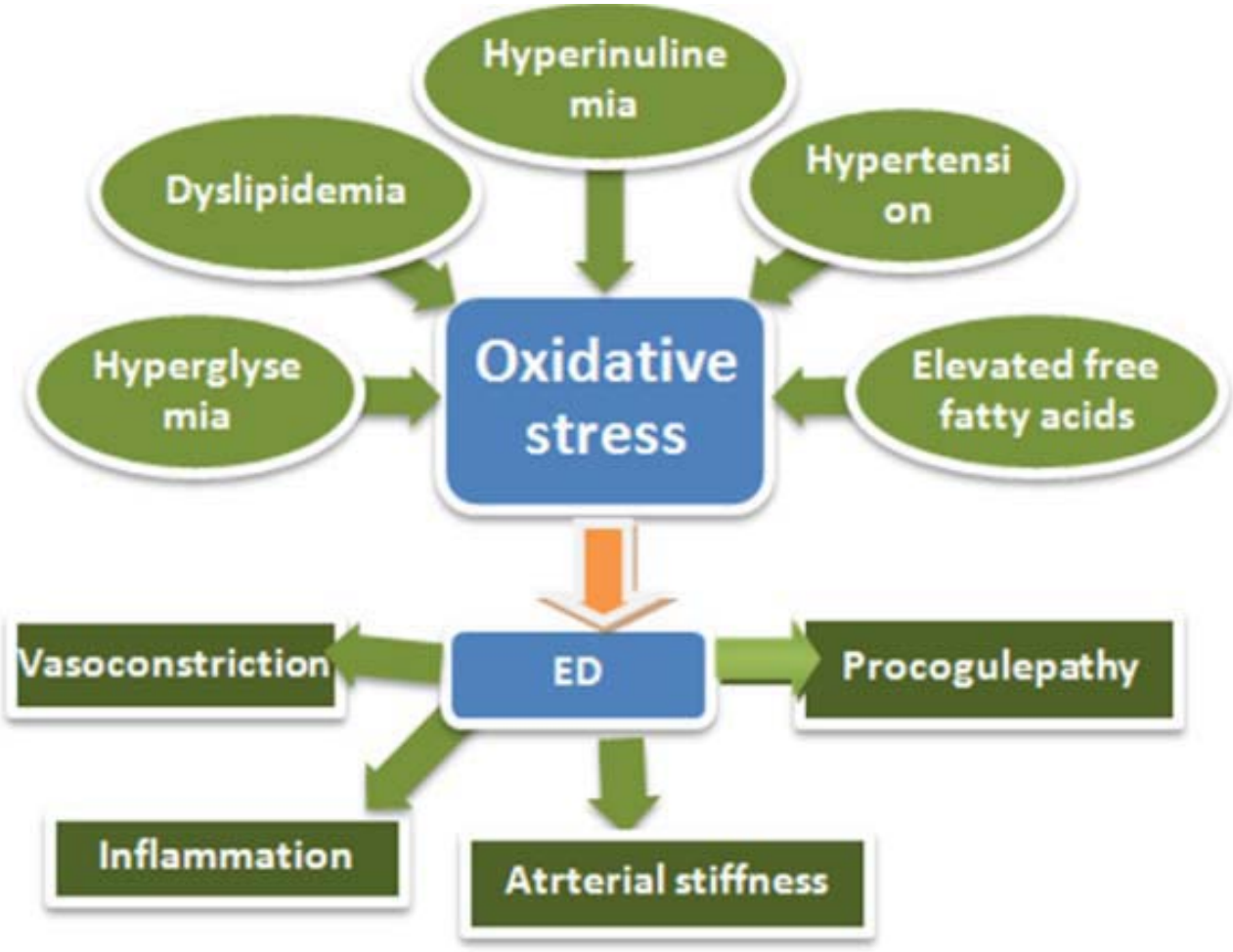

Fig.1 Probable mechanism of pathogenesis of ED

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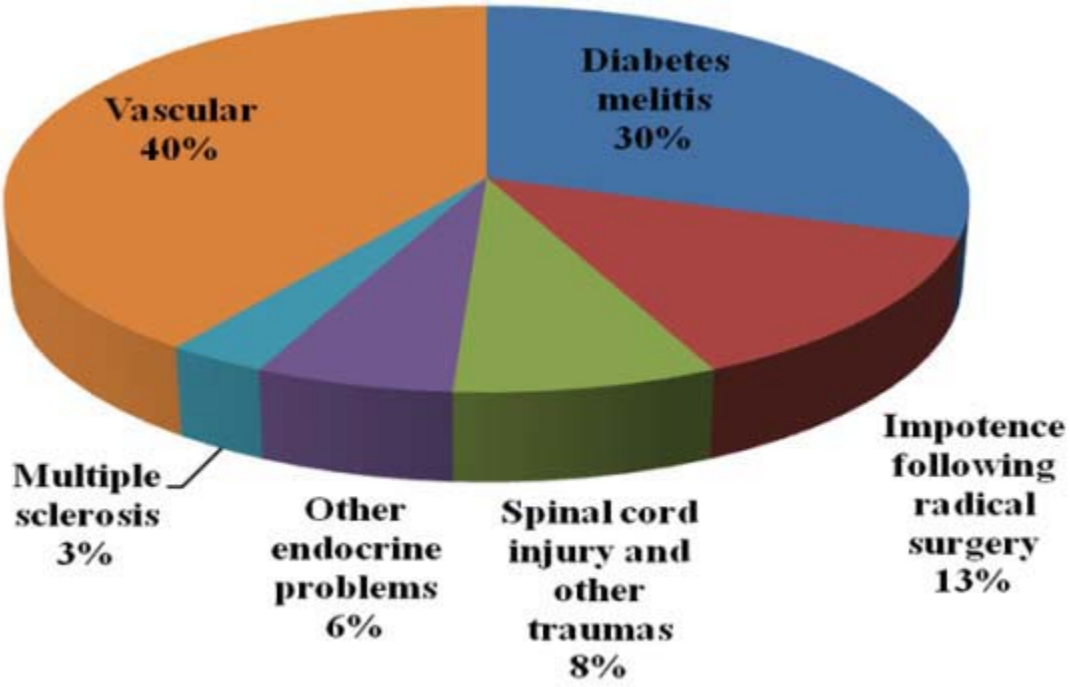

Fig.2 Pie digram represents various anatomical sites involved in SD/ED

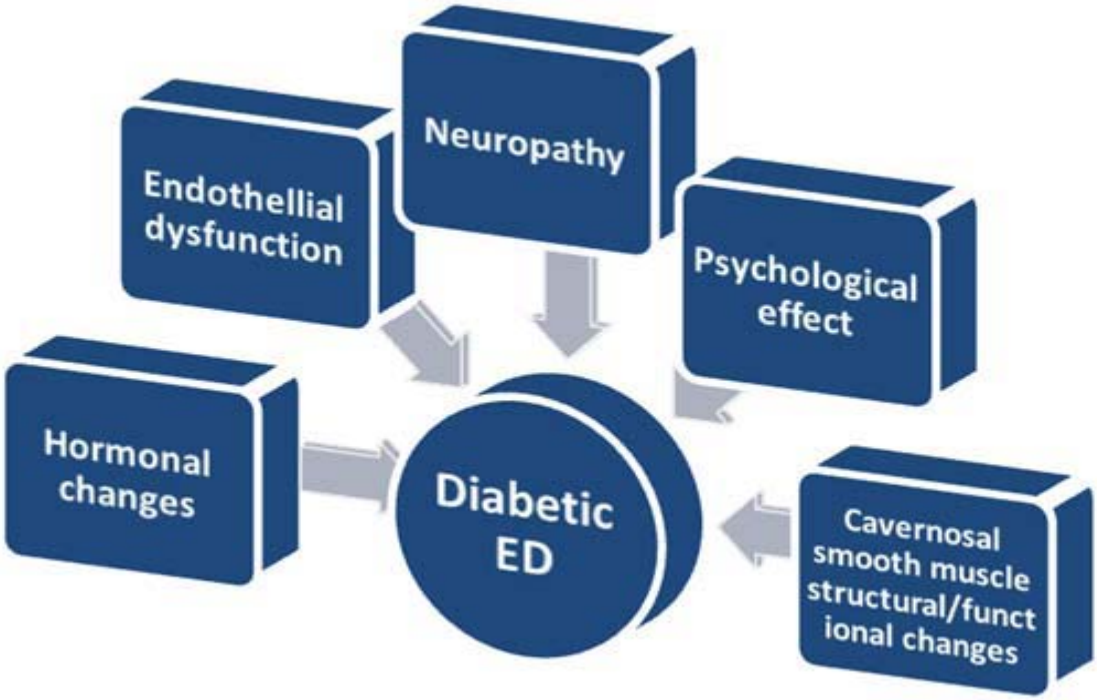

Fig.3. Probable biochemical mechanism of erectile/Sexual dysfunction

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Male Sexual Dysfunction

Sex disorders of the male are classified into disorders of sexual function, sexual orientation and sexual behavior. In general, several factors must work in harmony to maintain normal sexual function. Such factors include neural activity, vascular events, intracavernosal nitric oxide system and androgens [2]. Thus, malfunctioning of at least one of these could lead to sexual dysfunction of any kind. Sexual dysfunction in men refers to repeated inability to achieve normal sexual intercourse. It can also be viewed as disorders that interfere with a full sexual response cycle. These disorders make it difficult for a person to enjoy or to have sexual intercourse. While sexual dysfunction rarely threatens physical health, it can take a heavy psychological toll, bringing on depression, anxiety and debilitating feelings of inadequacy [3].

Sexual dysfunction is more prevalent in males than in females and thus, it is conventional to focus more on male sexual difficulties. It has been discovered that men between 17 and 96 years could suffer sexual dysfunction as a result of psychological or physical health problems. Generally, a prevalence of about 10% occurs across all ages. Because sexual dysfunction is an inevitable process of aging, the prevalence is over 50% in men between 50 and 70 years of age. As men age, the absolute number of Leydig cells decreases by about 40%, and the vigour of pulsatile lutenizing hormone release is dampened. In association with these events, free testosterone level also declines by approximately 1.2% per year. These have contributed in no small measure to prevalence of sexual dysfunction in the aged. Male sexual dysfunction (MSD) could be caused by various factors. These include: Psychological disorders (performance anxiety, strained relationship, depression, stress, guilt and fear of sexual failure), androgen deficiencies (testosterone deficiency, hyperprolactinemia), chronic medical conditions (diabetes, hypertension, vascular insufficiency (atherosclerosis, venous leakage), penile disease (Peyronie's, priapism, phinosis, smooth muscle dysfunction), pelvic surgery (to correct arterial or inflow disorder), neurological disorders (Parkinson's disease, stroke, cerebral trauma, Alzheimer's spinal cord or nerve injury), drugs (side-effects) (anti-hypertensives, central agents, psychiatric medications, antiulcer, anti-depressants and anti-androgens), life style (chronic alcohol abuse, cigarette smoking), ageing (decrease in hormonal level with age) and systemic diseases (cardiac, hepatic, renal pulmonary, cancer, metabolic, post-organtransplant)[2].

CAUSES OF MALE SEXUAL DYSFUNCTION

• Problems in the relationship with the sexual partner can lead to sexual dysfunction.
• Lowered levels of the male hormone testosterone (a condition known as hypogonadism) can cause low libido or ED.
• Certain drugs, such as antidepressants and blood pressure medications, can cause sexual dysfunction.
• Erectile function can be impaired by a stroke or by nerve damage from diabetes or surgery.

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• Disorders affecting blood vessels, such as atherosclerosis (hardening of the arteries) and high blood pressure, are risk factors for ED.
• Other possible causes of sexual dysfunction include smoking, obesity, kidney problems, depression, anxiety disorders, and alcoholism.

Main Type of male Sexual Dysfunction
• Low libido (sexual interest)
• Erectile dysfunction (ED, difficulty achieving or maintaining an erection)
• Premature ejaculation (reaching orgasm [sexual climax] too quickly)
• Delayed or inhibited orgasm
• Physical abnormalities of the penis

Treating male Sexual DysfunctionTING MALE SEXUAL DYSFUNCTION
• For psychological causes of sexual dysfunction, such as relationship problems, counseling, either individually or as a couple, may be beneficial. Sexual therapy with a therapist who specializes in sexual dysfunction may also help.
• Depression or anxiety disorders may need treatment.
• Any physical problems that may be affecting sexual function should be addressed.
• If a medication is interfering with sexual function, it may be possible to change or discontinue the medication.
• Prescription medications that treat erectile dysfunction may help a man achieve and maintain erections.
• Hormonal treatment, such as testosterone replacement therapy, may help with hormone imbalances that are contributing to sexual dysfunction [4].

EPIDEMIOLOGY

Erectile dysfunction is a common and widespread health problem that affects approximately 30
million men in US and in 1995 there was an estimated projection of 152 million men world wide who experienced ED [5]. If will rise to about 322 million men by the year 2025. The ED increases with age and other concomitant conditions like causes and psychological parameters. The executive committee of this conference believes that the current prevalence data regarding ED are strong, they see a need for strengthening the incidence data [6]. The Massachusetts male aging study is one of the pivotal studies on the prevalence of ED or SD between 1987 and 1989, men between the ages of 40 and 70 years were asked to categorize their sexual health [5].

ETIOLOGY

There are various and often multiple underlying causes. Some of which are treatable medical conditions. The most important organic causes are cardiovascular disease and diabetis, neurological problems (for example, trauma from prostatectomy surgery), hormonal insufficiencies (hypogonadism) and drug side effects. ED mainly based on various causes as psychogenic, organic (hormonal, vascular, drug induced, or neurogenic) or mixed psychogenic and organic [7]. Up to 80% of ED cases have an organic origin. The most common cause of ED is vascular disease in this coronary artery disease, peripheral vascular disease, hypertension, diabetis mellitus and psychogenic, neurogenic and multifactorial factors like aging, end-stage renal disease pelvic trauma. Some

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drugs induced the ED mainly β-blockers, calcium channel blockers, alcohol, antidepressant, anti psychotic, antiandrogens etc. Artherosclerosis is the most common cause of vasculogenic ED. Chronic tobacco use is a major risk factor for the development of vasculogenic ED because of its effects on the vascular endothelium [8]. Additionally chronic illness, depression, and lack of a sexual partners are all prevalent in this age population. Some sorts of surgery like radiation therapy, surgery of the colon, prostate, bladder, or rectum may damage the nerves and blood vessels involved in erection.

Prostate and bladder cancer surgery often require removing tissue and nerves surrounding a tumor which increases the risk for impotence convernosal disorders like peyronie's diseases and ED causes mainly hormonal deficiency pituitary gland tumor, abnormally high levels of the penis. Neurogenic disorders like spinal cord and brain injuries, nerve disorders such as parkinson's disease, alzheimer's diseases, multiple sclerosis, and stroke some evidence suggests that smaller penis size is associated with erectile dysfunction [9].

PATHOPHYSIOLOGY

Most basic and clinical studies of ED have shown the condition to be caused by a variety of

psychological and organic factors. Many of these factors have a direct effect on the central and peripheral mechanism of action of erectile function. In this five synergistic systems of penile erection are cyclic guanosine monophosphate, cyclic adenosine monophosphate, protein kinases and potassium channels,Generally penile erection is managed by two different mechanisms [6]. The first are is the reflex erection, it is achieved by directly touching the pencil shaft. The second is the phychogenic erection, it is achieved by erotic or emotional stimuli. Atrophy owning to loss of Bd- 1 expression in smooth muscle, and increased connective tissue synthesis, due to TGF beta, result in decreased compliance of cavernosal tissue [10]. Both there changes reduce with the gap junctions and K+ channels in cavernosal smooth muscle that are necessary for coordinated relaxation of cavernosal tissue [11]. In Peripheral mechanisms of the penis mainly the signals from the central nervous system influence the balance between the contract and relaxant factors that leads to stimulation of penile shat [12]. and secretion of nitric oxide (No), which causes the relaxation of smooth muscles of corpora cavernosa and subsequently penile erection will occurs and additionally adequate levels of testosterone and an intact pituitary gland are require for the development of a healthy erectile system. α, me lanocyte, melanocortin receptor, serotonin 5 HT_2c receptors stimulation are good therapeutic alternations in the treatment of ED [6,13]. In the normal erection impotence may develop due to hormonal deficiency, disorders of the neural system, lack of adequate penile blood supply or psychological problems. And some diabetic patients apoptosis owing to loss of BCT-2 expression in smooth muscle, and increase connective tissue synthesis, due to TGF beta, result is decreased compliance of cavernosal tissue [10, 14]. These changes reduce or interfere with the gap junctions and K channels in cavernosal smooth muscle that are necessary for coordinated relaxation of cavernosal tissue [13].

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CLINICAL MANIFESTATIONS AND DIAGNOSIS

Physical Examination

The physical examination should include a careful testicular examination to assess testicular size,
asymmetries, presence of hernias, or varicoceles. Additionally, a digital rectal examination to assess the prostatic size, consistency and presence of reduces in warranted. Penile inspection and palpation should be performed, with special attention to possible fibrotic plaques. Palpation and auscultation of femoral arteries for possible bruits is another important part of the examination [15].

Medical Diagnosis

Erectile dysfunction diagnosis mainly some blood tests are generally done to exclude underlying
disease, such as diabetis, hypogonadism and prolactinoma. Impotence is also related to generally poor physical health, poor dietary habits, obesity, and most specially cardiovascular disease such as coronary artery disease and peripheral vascular disease.

Specific examinations and tests

Although most patients with SD can be managed within the primary care setting, some circumstances, presented in Table 1, require specific diagnostic testing [1]. Specific diagnostic tests are presented in Table 2. [16]

Table 1 – Indications for specific diagnostic tests

- Patients with primary erectile disorder (not caused by organic disease or psychogenic disorder)
- Young patients with a history of pelvic or perineal trauma who could benefit from potentially curative vascular surgery.
- Patients with penile deformities (eg, Peyronie's disease, congenital curvature) that might require surgical correction.
- Patients with complex psychiatric or psychosexual disorders
- Patients with complex endocrine disorders
- Specific tests may also be indicated at the request of the patient or his partner
- For medicolegal reasons (eg, penile prosthesis implant, sexual abuse)

Table 2 – Specific diagnostic tests

Nocturnal penile tumescence and rigidity using Rigiscan

Vascular studies

- Intracavernous vasoactive drug injection
- Duplex ultrasound of the cavernous arteries
- Dynamic infusion cavernosometry and cavernosography
- Internal pudendal arteriography

Neurologic studies (eg, bulbocavernosus reflex latency, nerve-conduction studies)

Endocrinologic studies

Specialised psychodiagnostic evaluation

Clinical Management

Today there are many effective therapies for the treatment of SD. First-line therapies include oral
pharmacotherapy and psychosexual therapy-second line therapies include intra urethral and intracavernosal

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administration of vasoactive drugs, vacuum devices and penile prostheses. Vacuum devices can be used as first line therapy for sexual dysfunction.

Pharmacological therapy

SD or ED can in many cases be treated by drugs taken orally, injected or as penile suppositories. There drugs increase the efficacy of NO, which dilates the blood vessels of corpora cavernosa. Oral drugs or suppositories less effective compare to injections into the erectile tissue of the penile shaft are extremely effective but occasionally cause privapism. The first oral medication for the treatment of ED was sildenafil citrate (Viagra). Since then, oral agents have become the preferred mode of treatments by patients in surveys world wide. There are three oral agents that inhibit PDE5 currently on the market. Those are sildenafil citrates (Viagra), vardenfil (levitra), Tadalafil (Cialis). These drugs inhibiting PDE5, which maintains intracavernosal levels of cGMP, subsequently producing vasodilation and penile erection.

Sildenafil Citrate (Viagra)

Sildenafil citrate is a selective and potent inhibitor of cyclic guanosine monophosphate
(PDE5) that enhances penile erection to sexual stimulation by the predominent enzyme that metabolized cGMP in the corpus cavernosum [17]. Since its introduction in 1998, sildenafil has gained worldwide acceptance as the first-line treatment of erectile dysfunction/Sexual dysfunction of organic, psychogenic or mixed etiology [7]. After oral administration the drug is rapidly absorbed, with an appropriate duration of therapeutic activity that is convenient for most couples [18, 19]. Sildenafil significantly improves the ability to achieve and maintain erections and successfully engage in sexual intercourse [20]. Sildenatil is safe and efficacy in special subsets of patients, including those with concomitant type-1 or type-2 diabetes treated hypertension depression, end-stage renal disease maintained with heamodialysis [21].

Vardenafil (Levitra)

Verdenafil is a highly potent inhibitor of PDE5 [6]. It was approved for use in the United States in late 2003. It is a more selective PDE5 inhibitor than sildenafil citrate (Viagra). The absorption of vardenefil is delayed by a fatty content of more than 30% in a male [15]. The half life of vardenafil is 4.4 to 4.8 hours, the first trial using the agent included 580 patients, excluding patients with spinal cord injury, radical prostatectomy, hypogonadism, thyrotoxicosis [13].

Tadalafil (Cialis)

Tadalafit is a selective inhibitor of PDE5 with a long half-life [22]. It has half life of 17.5 hours. The clinical onset of action occurs in less than 1 hour. There is no interaction between food and alcohol on the absorption of the drug [15]. Tadalafil associated with an improvement in depressive symptoms and quality of life is men with a diagnosis of mild to moderate depression according to a structured rating interview for DSM-IV [23].

Apomorphine (Uprima)

Apomorphine (Uprima) is a potent emetic that acts on central dopaminergic receptors. The stimulation of central dopeminergic receptors transmits excitatory signals down the spinal cord to the sacral parasympathetic nucleus, stimulating activity of the sacral nerves

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supplying the penis. It was been used successfully in up to 67% of patients when administered through a sublingual preparation. Subcutaneous injections of apomorphine produce almost a 100% erectile response, but nausea and vomiting are limiting factors to this mode of administration.

Alprostadil (Prostaglandin E1)
Alprostadil can be injected the penis or inserted using a special application usually just before sexual intercourse. It has an onset of action of 10-15 minutes and its effects can last over 4 hours. Alprostadil (Prostaglandin E1) mechanism mainly PGE1 binds to PGE receptors and causes a relaxation response medicated by cyclic adenosine monophosphate (cAMP).

Trazodone (Desyrel)
Trazodone (Desyrel) is a serotonin reuptake inhibiting agent. Its action in ED is believed to be the result of central serotonergic and peripheral α-adrenolytic activity. Side effects include drowsiness, insomnia, headaches, and weight loss.

Phentolamine (Regitine)
Phentolemine is a injection is used to the dysfunction. It is an α_1-and α_2 adrenergic receptor antagonist. The mechanism of phentolamine is dearly corporal smooth muscle relaxation, noradrenaline is the primary determinant of cavernosal smooth muscle contraction and it is released of NA induced contraction over NO-induced smooth muscle relaxation may contribute to ED. It having some adverse effects nasal congestion, headaches, dizziness and tachycardia [15, 24].

Non Pharmacological Therapy

Non pharmacological therapy mainly who do not want pharmacological intervention and they need vaccum therapy, surgery and counseling. These current therapies shows prominent role in the treatment of sexual dysfunction.

Vacuum therapy
Vacuum therapy is second line therapy. In this vacuum devices can be used as first-line therapy is couples who do not need pharmacological intervention and are not appropriate for counseling. It is working by placing the penis in a vacuum cylinder device. The device helps draw blood into the penis by applying negative pressure. A tension ring is applied at the base of the penis to help maintain the erection. This type of device is some lines referred to as penis pump and may be used just prior to sexual inter course.

Surgery (Penile prosthesis)
This surgical therapy used to be quite common before the advent of oral agents. The use of prostheses is still a suitable alternative for those who are unresponsive to less invasive treatments. Prostheses can be classified as rod, one-piece inflatable, two-piece inflatable, and three piece inflatable which involves the insertion of artificial rods in to the pen's (ED). Patients are usually satisfied with the results of prosthetic placement.

Counseling
Counseling is often a consideration, both where a psychological cause is suspected or must be ruled out of to assist in management of any distress.

Testosterone
Testosterone provides intra penile nitrous oxide synthase (Nos), which has an important role in enhancing the

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production of NO' subsequent local vasodilation, and penile erection. Oral testosterone can reduce ED in some men with low levels of natural testosterone, but it is often, ineffective and may cause liver damage [25].

Exercise: Particularly aerobic exercise is an effective cheap treatment for erectile dysfunction [26].

Herbal therapy

Despite of all the advances in modern medicine, traditional medicine still plays a significant role in the lives of many people Sexual dysfunction, known clinically as an inability to obtain or maintain an erection. It is a medical problem affecting young as well as old men. Although a number of therapies become available in the last two decades, problems with costs, efficacy, safety and case to administer were experienced. The therapies ranged from herbal remedies used by native healers, these drugs based on physiological mechanisms of erection Several medicinal plants have always been available and used to treat many ailments including impotence. The medicinal Plants having aphrodisiac activity is given in **Table 3.**

Table.3 Aphrodisiac Plants

S. No.	Plant Name	Family	Part Used	Reference
1.	*Asteracanta longifolia*	Acanthaceae	Seeds	27
2.	*Anacyclus pyrethrum* DC.	Compositae	Roots	28
3.	*Piper guineense*	Piperaceae	Fruit	29
4.	*Curculigo orchioides* Gaertn.	Amaryllidaceae	Rhizomes	30, 46
5.	*Nymphaea stellata*	Nymphaeceae	Leaves	31
6.	*Passiflora incarnate* Linn.	Passifloraceae	Leaves	32
7.	*Turnera aphrodisiaca*	Turneraceae	Aerial parts	33
8.	*Pedalium murex* (L.)	Pedaliaceae	Roots	34
9.	*Mimosa Pudica* Linn.	Mimosae	Roots	35
10.	*Blepharis edulis* Linn.	Acanthaceae	Seeds	36
11.	*Butea frondosa*	Papilionaceae	Bark	37

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	Koen.ex Roxb.			
12.	*Myrisita fragrans* Houtt.	Myristicaceae	Kernel	38
13.	*Chlorophytum borivilianum*	Liliaceae	Root	39
14.	*Ocimum gratissimum*	Lamiaceae	Leaves	40
15.	*Crocussativus*	Iridaceae	Stigma	41
16.	*Tynanthus panurensis* (Bur.) Sandw.	Bignoniaceae	Bark, wood	42
17.	*Vanda tessellata* (Roxb.) Hook. ex Don.	Orchidaceae	Flower, Root	42
18.	*Valeriana jatamansi* Wall.	Valerianaceae	Root	42
19.	*Vanda tessellata*	Orchidaceae	Flower	42
20.	*Withania somnifera* Linn.	Solanaceae	Leaf, Root	42
21.	*Bryonia laciniosa*	Cucurbitaceae	Seeds	43
22.	*Spilanthes acmella* (L.) Murr.	Asteraceae	Flower	44
23.	***Arctium lappa* L.**	Compositae	Roots	45
24.	*Durio zibenthinus* Linn.	Bombacaceae	Fruit	47
25.	*Abelmoschus manihot* (L.)	Malvaceae	Seeds	48

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CONCLUSION

The review article focused on current therapy on Sexual dysfunction. SD is the inability to attain an erection sufficient for satisfactory sexual performance. Today there are many effective therapies for treatment of SD. Sexual dysfunction is also indicative of underlying vasculopathy and represents a predictor of more serious cardiovascular, psychoactive disorders. In this first line therapies include oral pharmacotherapy and psycho sexual therapy. Second line therapies include intraurethral and intracavernosal administration of vasoactive drugs, vaccum devices and surgery (Penile prostheses). In the oral therapy sildenafil citrate (Viagra) and other PDE-5 inhibitor drugs vardenefil, Tadalfil, Alprostadil shows major role in treating SD/ED and vaccum device therapy, surgery and following counseling also useful to treatment the SD. Now days the patients shows interest in the herbal therapy. These traditional herbal remedies are accepted among men and they provide them with an easy alternative to legitimize medical treatment for their sexual problem. In the Males study, about 50% of the respondents claimed that the reasons for not using phosphodiesterase type 5 (PDE-5) were because it was risky and they were looking for natural therapies. Other important characteristics of the SD therapies that are sought by sufferers include safety, containing natural aphrodisiac agent. One has to be extremely cautious about the use of traditional herbal medicines due to the fact that in India, quality control regulations are non-existent or they are too flexible. Further investigation on the plants can increase the isolation of the newer molecules which will be helpful for the treatment of Sexual dysfunction.

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