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## ROLE OF SILDENAFIL IN THE TREATMENT OF ERECTILE DYSFUNCTION

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**Abstract:** Erectile dysfunction (ED) is a common disorder that is associated with the aging process, as well as a number of risk factors, such as high blood pressure, heart disease, obesity, dyslipidemia, diabetes, drug-related male hypogonadism, and pelvic surgery. Many of these factors are components of the metabolic syndrome, a major risk factor for cardiovascular disease (CVD). ED shares common risk factors for heart disease. Endothelial dysfunction seems to be the beginning of the underlying pathophysiology of these conditions. The efficacy, tolerability, and the cardiovascular safety of sildenafil were evaluated in many large, randomized, placebo-controlled clinical trials in the general population of men with erectile dysfunction, including men with a variety of medical conditions. This medicine is also effective in a variety of specific patient populations, including in difficult-to-treat populations such as diabetes mellitus and after radical prostatectomy. This is due to the rapid start-up of the action, within a 14-minute. some of the men - and it is a long-term period of up to 12 hours. Does this medicine is to improve the quality of life and satisfaction ?????????? male, and was well-tolerated with a favorable safety profile. New evidence suggests that sildenafil has beneficial effects on many chronic diseases. It has been approved for the treatment of idiopathic pulmonary hypertension. Numerous papers have proposed the same time, improves endothelial function, and suggested a potential role in premature ejaculation, or for the treatment of lower urinary tract symptoms.

**Keywords:** erectile dysfunction, phosphodiesterase inhibitors, safety, treatment outcome

**Introduction:** Erectile dysfunction (impotence) is the inability to get and keep an erection firm enough for sex. Having erection trouble from time to time isn't necessarily a cause for concern. If erectile dysfunction is an ongoing issue, however, it can cause stress, affect your self-confidence and contribute to relationship problems. Problems getting or keeping an erection can also be a sign of an underlying health condition that needs treatment and a risk factor for heart disease.<sup>1,2</sup>

## Causes

Male sexual arousal is a complex process that involves the brain, hormones, emotions, nerves, muscles and blood vessels. Erectile dysfunction can result from a problem with any of these. Likewise, stress and mental health concerns can cause or worsen erectile dysfunction. Sometimes a combination of physical and psychological issues causes erectile dysfunction. For instance, a minor physical condition that slows your sexual response might cause anxiety about maintaining an erection. The resulting anxiety can lead to or worsen erectile dysfunction.<sup>3,4</sup>

### Physical causes of erectile dysfunction

In many cases, erectile dysfunction is caused by something physical. Common causes include:

- Heart disease
- Clogged blood vessels (atherosclerosis)
- High cholesterol
- High blood pressure
- Diabetes
- Obesity
- Metabolic syndrome - a condition involving increased blood pressure, high insulin levels, body fat around the waist and high cholesterol
- Parkinson's disease
- Multiple sclerosis
- Certain prescription medications
- Tobacco use
- Peyronie's disease — development of scar tissue inside the penis
- Alcoholism and other forms of substance abuse

### Psychological causes of erectile dysfunction

The brain plays a key role in triggering the series of physical events that cause an erection, starting with feelings of sexual excitement. A number of things can interfere with sexual feelings and cause or worsen erectile dysfunction. These include:<sup>4,5</sup>

- Depression, anxiety or other mental health conditions
- Stress
- Relationship problems due to stress, poor communication or other concerns
- Sleep disorders
- Treatments for prostate cancer or enlarged prostate
- Surgeries or injuries that affect the pelvic area or spinal cord
- Low testosterone

## Risk factors

As you get older, erections might take longer to develop and might not be as firm. You might need more direct touch to your penis to get and keep an erection.

Various risk factors can contribute to erectile dysfunction, including:

- **Medical conditions**, particularly diabetes or heart conditions
- **Tobacco use**, which restricts blood flow to veins and arteries, can — over time — cause chronic health conditions that lead to erectile dysfunction
- **Being overweight**, especially if you're obese
- **Certain medical treatments**, such as prostate surgery or radiation treatment for cancer
- **Injuries**, particularly if they damage the nerves or arteries that control erections
- **Medications**, including antidepressants, antihistamines and medications to treat high blood pressure, pain or prostate conditions
- **Psychological conditions**, such as stress, anxiety or depression
- **Drug and alcohol use**, especially if you're a long-term drug user or heavy drinker

## Complications<sup>6, 7, 8</sup>

Complications resulting from erectile dysfunction can include:

- An unsatisfactory sex life
- Stress or anxiety
- Embarrassment or low self-esteem
- Relationship problems
- The inability to get your partner pregnant

## Diagnosis

For many people, a physical exam and answering questions (medical history) are all that's needed for a doctor to diagnose erectile dysfunction and recommend a treatment. If you have chronic health conditions or your doctor suspects that an underlying condition might be involved, you might need further tests or a consultation with a specialist.

Tests for underlying conditions might include:

- **Physical exam.** This might include careful examination of your penis and testicles and checking your nerves for sensation.
- **Blood tests.** A sample of your blood might be sent to a lab to check for signs of heart disease, diabetes, low testosterone levels and other health conditions.
- **Urine tests (urinalysis).** Like blood tests, urine tests are used to look for signs of diabetes and other underlying health conditions.
- **Ultrasound.** This test is usually performed by a specialist in an office. It involves using a wandlike device (transducer) held over the blood vessels that supply the penis. It creates a video image to let

your doctor see if you have blood flow problems. This test is sometimes done in combination with an injection of medications into the penis to stimulate blood flow and produce an erection.

- **Psychological exam.** Your doctor might ask questions to screen for depression and other possible psychological causes of erectile dysfunction.<sup>9,10</sup>

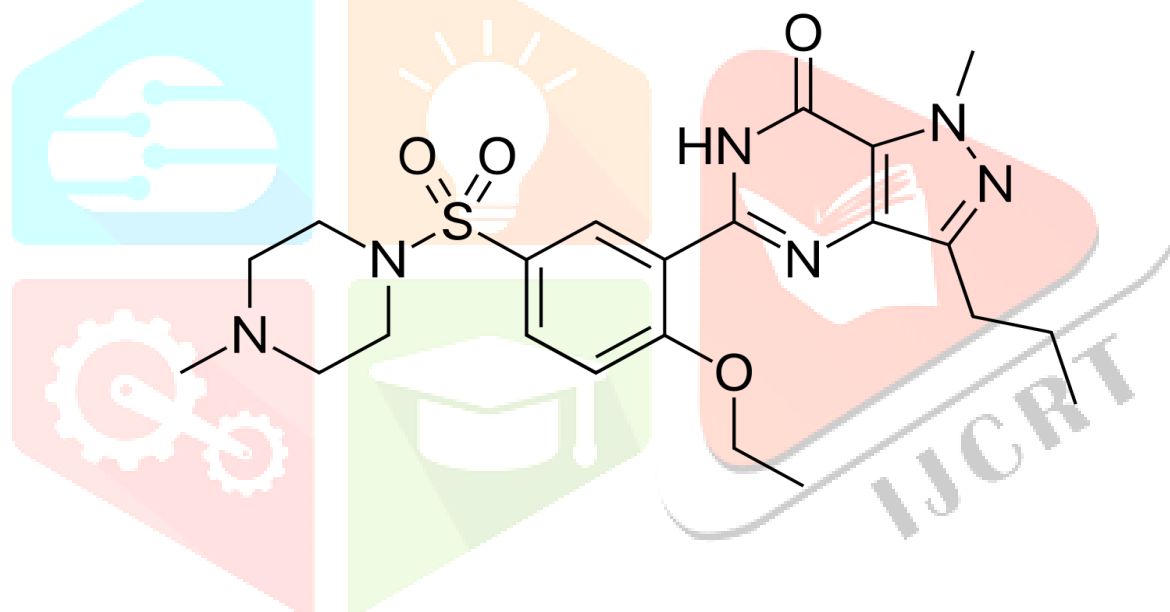
## Treatment

### Oral medications

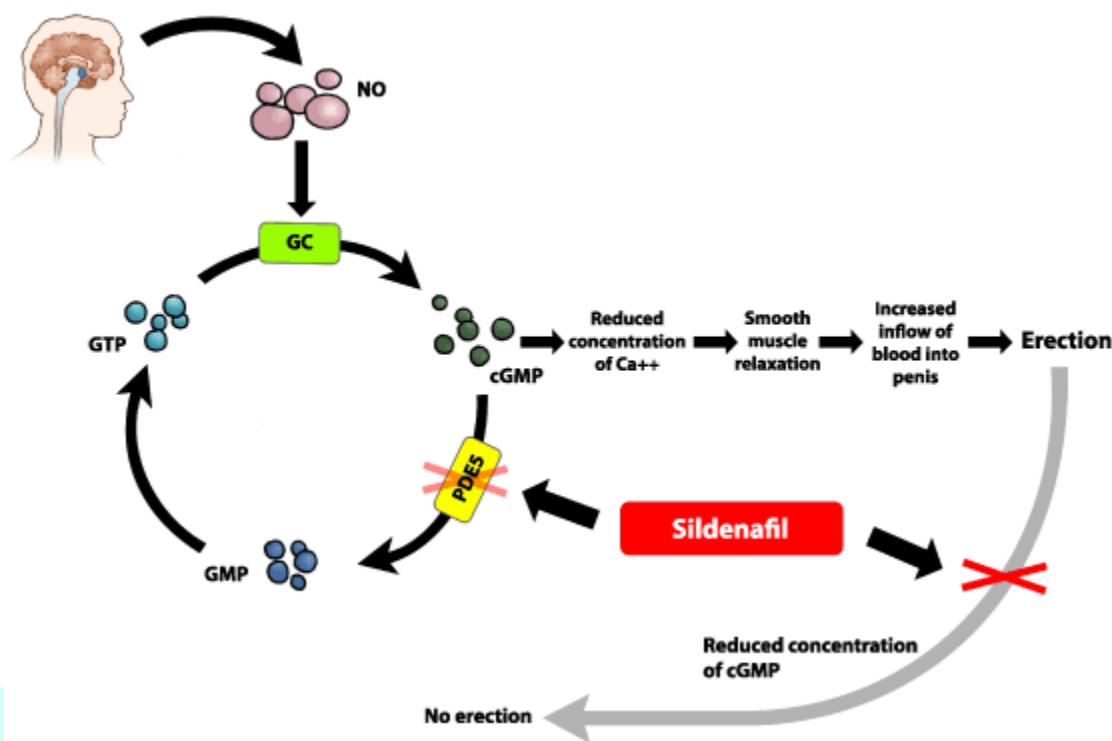
Oral medications are a successful erectile dysfunction treatment for many men. They include:

- Sildenafil (Viagra)
- Tadalafil (Adcirca, Cialis)
- Vardenafil (Levitra, Staxyn)
- Avanafil (Stendra)

### STRUCTURE OF SILDENAFIL:



## MECHANISM OF ACTION (SILDENAFIL)



The mechanism of action of sildenafil involves the protection of cyclic guanosine monophosphate (cGMP) from degradation by cGMP-specific phosphodiesterase type 5 (PDE5) in the corpus cavernosum. Nitric oxide (NO) in the corpus cavernosum of the penis binds to guanylate cyclase receptors, which results in increased levels of cGMP, leading to smooth muscle relaxation (vasodilation) of the intimal cushions of the helicine arteries. This smooth muscle relaxation leads to vasodilation and increased inflow of blood into the spongy tissue of the penis, causing an erection.<sup>9, 11, 12</sup>

### SPECIFICATION

Sildenafil is a medicine used to treat erectile dysfunction. It increases blood flow to the penis to help men get an erection. At least two-thirds of men have improved erections after taking it. Sildenafil is also sometimes used to treat pulmonary hypertension (high blood pressure in the blood vessels that supply the lungs). This medicine is available on prescription and can also be bought from most pharmacies. It comes as tablets that you swallow, chewable tablets, and as a liquid that you drink.<sup>8, 9</sup>

- It usually takes 30 to 60 minutes for sildenafil to work for erectile dysfunction. You can take it up to 4 hours before you want to have sex.
- Taking sildenafil alone will not cause an erection. You need to be aroused for it to work.
- The most common side effects are headaches, feeling sick, hot flushes and dizziness. Many men have no side effects or only mild ones.
- It can be dangerous to take sildenafil if you also take medicines called nitrates (often given for chest pain). The combination can cause a dangerous fall in your blood pressure. If you're not sure if you're taking a nitrate, ask your doctor or pharmacist.

- Sildenafil is called by the brand names Viagra (for erectile dysfunction) and Revatio (for pulmonary hypertension).
- Sildenafil for erectile dysfunction (Viagra) can be taken by men aged 18 and over. It's not for women or children.
- Sildenafil for pulmonary hypertension (Revatio) can be taken by adults and children aged 1 and over.
- Sildenafil is not suitable for some people.

**Do not take sildenafil if you:**

- have had an allergic reaction to sildenafil (Viagra) or any other medicines in the past
- are taking medicines called nitrates for chest pain
- have a serious heart or **liver problem**
- have recently had a **stroke or a heart attack**
- have **low blood pressure**
- have a rare inherited eye disease, such as retinitis pigmentosa
- have **sickle cell anaemia** (an abnormality of red blood cells), leukaemia (cancer of blood cells) or **multiple myeloma** (cancer of bone marrow)
- have a deformity of your penis or **Peyronie's disease** (curved penis)
- have a heart problem. Your doctor should carefully check whether your heart can take the additional strain of having sex.
- have a **stomach ulcer** or a bleeding problem like **haemophilia**

**Taking too much sildenafil by accident can cause unpleasant side effects, such as:**

- headaches
- dizziness
- indigestion
- blocked nose
- altered visio

## Common side effects

Common side effects happen in more than 1 in 100 people.

If you get these side effects, keep taking the medicine, but tell your doctor or pharmacist if these side effects bother you or do not go away:

- headaches
- feeling sick
- hot flushes, including facial flushing
- indigestion
- a colour tinge to your vision or blurred vision
- stuffy nose

- dizziness

## Serious side effects

- chest pains - if this happens during or after sex, get into a semi-sitting position and try to relax; do not use nitrates to treat your chest pain
- prolonged and sometimes painful erections - if you have an erection that lasts for more than 4 hours, contact a doctor immediately
- a sudden decrease or loss of vision
- a serious skin reaction - symptoms may include fever, severe peeling and swelling of the skin, blistering of the mouth, genitals and around the eyes.<sup>7,14</sup>
- seizures

## Conclusions

Sildenafil is an effective therapy with a good safety and tolerability profile in men with erectile dysfunction (Ed). It's actually a lot of people, even though their effectiveness is lower in the so-called difficult-to-treat populations, such as patients with diabetes mellitus or following radical prostatectomy, including any of the men in the older age groups. If you can significantly increase the level of satisfaction and quality of life of both the sufferers and their partners. In addition, new data from basic and clinical studies have demonstrated a potential role to play in the future of many other chronic diseases.

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