

Toxic Effects of Sexual Drug Overdose: Sildenafil (Viagra)

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Abstract: In today's world main problem adolescence consumption of drugs are increasing day by day. Sildenafil is the sexual drug. Sildenafil is the drug which to increase sexual power and improves flow of blood to the phallus (male reproductive part). It's most commonly found in the form of brand names are Viagra and Revatio. It can be administrated orally or injected directly into the veins. Sildenafil is an effective inhibitor of recurring guanosine monophosphate in the corpus cavernosum and consequently rises the penile reaction to sexual stimulus. Sildenafil also causes some side effect like headache, heartburn, flushed skin, visual disturbance, and dyspepsia. Sildenafil does not protect with sexually transmitted diseases like HIV, hepatitis B, AIDS etc. Sildenafil may effect severe organ like cardiovascular system, reproductive system, pulmonary hypertension, retinal dysfunction etc. Due to overdose of the sildenafil the person get heart attack, stroke, irregular heartbeats and death may also occur in rare cases. This paper aims about the detailed study of the sexual drug and the poisonous effects which is caused to the humans.

Keywords: sildenafil, sexual drug, Viagra, dyspepsia.

1. INTRODUCTION

Sildenafil is the sexual drug. Sildenafil is a new oral drug specially aimed at the cure of erectile dysfunction [1]. Sildenafil citrate is a discerning inhibitor of phosphodiesterase 5 (PDE5) and stayed the initial agent through this way of act for the cure of man erectile dysfunction [2]. Male erectile dysfunction (ED) is the determined or recurring incapability to reach, or to uphold till end of the sexual action, a suitable erection [3]. Sildenafil (Viagra) conventional Food and Drug Administration approval in March 1998 such as the earliest oral agent for erectile dysfunction [4]. Sildenafil workings such as a modest inhibitor of an enzyme of the phosphodiesterase type five class (PDE-5). Here are eleven forms of phosphodiesterase found over the body [5, 6]. Sildenafil is a weak vasodilator, resultant in lesser, transitory decreases in systolic (10 mmHg) and diastolic (7 mmHg) blood pressure (BP) when directed orally; no clinically important special effects on heart rate (HR) have been stated [7]. Sildenafil is quickly engrossed, by maximum plasma concentrations happening in one hour after oral admin then a mean fatal half-life of three to five hours [5]. Since the approval of sildenafil,

several information of unexpected death amid patients preserved by this drug have upraised about worries concerning its care in patients with coronary artery disease [8].

The furthestmost usually stated adverse effects of sildenafil are headache, gastroesophageal reflux, dyspepsia, facial flushing, nasal congestion, pupil sparing, and third nerve palsy [9, 10]. Described cardiovascular side properties in the usual healthy population are naturally slight and related with vasodilatation (ie, headache, flushing, and small decreases in systolic and diastolic blood pressures). However, although their incidence is small, serious cardiovascular events, including significant hypotension, can occur in certain populations at risk [11]. The blood pressure dropping effect of sildenafil is uncertain and therefore improbable to activate a reflex heart rate response. Certainly, a mild sympathetic reaction straight to the vasculature might remain accountable for the upkeep of blood pressure deprived of activating a impulse tachycardia [12]. Though, with pharmacological efforts resultant in larger reduction of blood pressure as understood by the nitrate contact study here is a minor impulse reaction in heart rate in demand toward uphold blood pressure

[13]. The cardiovascular effects of sildenafil are important subsequently of the recurring incidence of vital cardiac disease in men with erectile dysfunction and information representing severe cardiac actions temporally related by the usage of this drug [14]. Sildenafil may be expectable to improve reduction of the cavernosal smooth muscle, which in go increases blood flow into the cavernosal spaces, thus foremost to increased intracavernosal pressure, a main issue in making an erect penis [15, 16]. Sildenafil has remained carefully used in the action of erectile dysfunction of numerous etiologies through decent acceptance and a low occurrence of lateral special effects. Though, the statement that maximum issued information to age have been industry supported has presented a possible prejudice. In accumulation, insufficient studies to era devise inspected the side-effect outline of sildenafil in a medical exercise surrounding a widespread variety of patients. This description delivers a non-industry maintained review in a campus condition of the side-effect outline of a general and widely used medicine [17, 18, 19].

2. CHEMICAL STRUCTURE OF SILDENAFIL CITRATE

Sildenafil is chemically 5-[2-ethoxy 5-(4-methylpiperazine-1-yl)sulfonylphenyl]-1-methyl-3-propyl-6,7-dihydro-1H-pyrazolo[4,3-d]pyrimidin-7-one. With molecular formula $C_{22}H_{30}N_6O_4S$ as shown in fig [20].

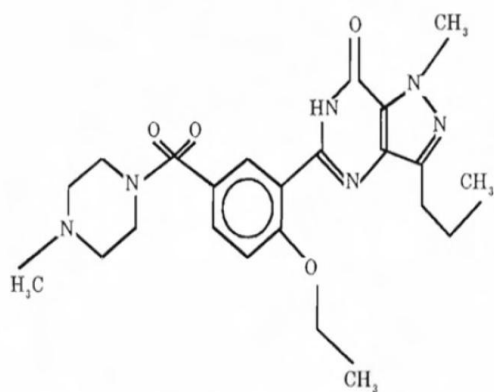


Fig: Chemical structure of sildenafil citrate [20]

2.1. Sildenafil uses as a Club or Party Drug

In the face of an increasing body of literature, there are still no clear and reliable definitions or drug lists amongst educators; others have renowned this irregularity [21,22] and have mentioned to the term “club drug” as “amorphous” [23]. Club drugs are frequently consumed at subversive all-night events known as “raves” [24]. Some men, therefore, may

consume sildenafil to produce an erection to permit penetrating anal sex. Consequently, opposing effects since club drugs used in tour gathering surroundings might rise from overdose, medication interface, or leisure drug-pharmaceutical interfaces. Furthermore, an inability to acquisition drugs might lead to changed sexual actions and increase the danger of HIV transmission [25-28]. Though club drugs are frequently used unaccompanied to excess, two additional mechanisms combine, maybe synergistically, to produce club drug poisonousness [29].

2.2. Pharmacology of Sildenafil Citrate

In scientific studies, sildenafil has been evaluated for its effect on the capability of men was varied in the residual 18% of men [30]. Sildenafil is quickly engrossed afterward oral administration, with absolute bioavailability of about 40%. Its pharmacokinetics is dosage proportional above the suggested dosage range (25, 50 and 100 gm). It is eradicated mainly by hepatic metabolism (mainly cytochrome P450 3A4) and is rehabilitated to lively metabolite with properties alike to parental molecule sildenafil [20]. The pharmacodynamics close opinions that have remained examined with sildenafil imitate the dispersal of PDE5 in altered tissues, i.e., human corpus cavernosum (penile tumescence), vascular smooth muscle (vasodilatation), and platelets (antiplatelet function) [31]. Plasma absorptions highest in 30 to 120 minutes (median, 60 minutes) of oral dosage active in the desisted state. Sildenafil is chiefly absorbed by the cytochrome P450 3A4 (major route) and 2C9 (minor route) hepatic microsomal isoenzymes, which alteration it to an active *N*-dimethyl metabolite that has continued exposed to individual 50% of the parent drug’s potency for inhibiting PDE5. Plasma concentrations of this metabolite are 40% of individuals understood for sildenafil, so that the metabolite accounts for 20% of the pharmacological effects of sildenafil [32].

2.3. Adverse Effect of Sildenafil Citrate on Human Health

2.3.1. Effect of Hormonal and Reproductive Disturbance

Brain controls hormonal secretion and it is sensitive to hormonal response; the neuro endocrine response system contains hypothalamus, pituitary, gonads, however also the amygdala that is related to the hypothalamic-pituitary axis (HPA) elaborate in

the regulation, making and secretion of sex hormones [33]. Severe stimulus of testosterone secretion with management of human chorionic gonadotropin (HCG), a complex through luteinizing hormone-like activities, produces only a reduced reaction in uremic men [34].

2.3.2. *Effect of Retinal Dysfunction*

Though the part of sildenafil in erectile dysfunction exists well understood and has been clear in feature, optical effect of sildenafil are still deficient. There are about reports in the literature on the retinal side-effects of sildenafil [35, 36]. Supervision of PDE5 inhibitors has been connected with visual turbulences such as blue tinge, increased glare of coloured lights and blurry vision; but, the precise device of these disorders takes not remained definitively clarified [37]. The PDE5 enzyme presented a extensive appearance on retinal and choroidal vessels, confirming the straight influence of PDE5 inhibitors on their enlargement. Lastly, surprisingly, we establish the occurrence of the PDE5 enzyme on ganglion (III neuron) and bipolar cell layers (II neuron). Ganglion and bipolar cell layers performs as a filter in the visual signal, giving a first codification of the neural signal [38-41].

2.3.3. *Effect on Pulmonary Hypertension in Human Health*

Pulmonary hypertension (PH) of unidentified etiology or related with connective tissue syndrome is a lethal disease with few medical treatments [42]. Patients with liver diseases are at hazard of emerging pulmonary vascular complications [43]. Sildenafil has also been reported to increase arterial Po₂ [44] and recover bodily performance in numerous circumstances of severe pulmonary hypertension, but no education has explored the consequence of a numerous daytime action by sildenafil on these variables in usual focusses bare to elevation circumstances [45, 46, 47]. Approximately medical doctor have initiated by sildenafil as another to, and in mixture with, in the initial organisation of PAH, but its residence is inaccurate [48]. Headache existence a probable adversative outcome of sildenafil, though, its likely upsurge in preserved issues might have risk a likely helpful outcome on general AMS score since of a improved blood oxygenation. The suggestion of sildenafil in the action of HAPE has not stayed addressed in the current study since nobody of the issues agonised after this severe disorder. The valued effect on Ppa powerfully advises, though, that

this drug could be extremely effective in this disorder, deprived of adverse systemic effect, opposing to the typically proposed calcium blockers [49, 50]. A few uncontrolled clinical studies have suggested that combinations of aerosolised iloprost and sildenafil, as fine as aerosolised iloprost and are harmless and effective in selected patients with liberal disease in spite of prostanoid cure [51,52]. Preclinical studies have revealed that sildenafil selectively decreases pulmonary artery pressure with slight effect on systemic BP. Randomised, double blind, crossover design studies support these findings; sildenafil improved 6-min walking distance and reduced mean pulmonary arterial systolic pressure in patients with primary pulmonary hypertension [53, 54].

2.3.4. *Effect on Cardiovascular System*

Males through cardiovascular illness are further possible to have erectile dysfunction than the overall male inhabitants since together circumstances share a number of hazard influences [55]. Different cAMP-specific PDE-3 inhibitors (milrinone, vesnarinone, and enoximone) that rise long-standing death in patients with heart failure [19, 20], sildenafil stays extremely selective (4000-fold) for human PDE-5 over human PDE-3 and has not been found to elevate cAMP [56]. Anecdotal information of cardiovascular deaths associated with sildenafil use produced substantial worry in the medicinal public in months of the drug's endorsement in late March 1998. Meanwhile formerly, the FDA has complete obtainable information on deaths in patients receiving sildenafil among the period of its endorsement and mid-November 1998 [57]. Besides, PDE5 is not present in cardiac myocytes, and sildenafil has been exposed to take no straight inotropic special effects on dog trabeculae muscle (Pfizer, unpublished data). Though, sildenafil has not been examined widely in heart failure patients [58].

3. DISCUSSION

Sildenafil is a sexual dysfunction and a psychotropic drug which is used in the form of antidepressants. This was a major essential growing problem that provides us to keep the use of sildenafil in differential for any patient who present with symptoms described about. Human health is directly affected by Neurological dysfunction. Some study also shown that the sildenafil uses in the sexual assault cases by giving the drug forcefully to the teenagers so, that they go in the unconscious

state. This study shows that sildenafil, directed in particular oral dosages, is in effect in improving erectile activity in patients with male erectile dysfunction for which there is no recognised biological cause. Due to the overdose of the sildenafil drug, the person occur various disease like strokes, heart failure and death may be also occur. The absence of scientific study in human awareness about the hazard of sildenafil and adolescence will unceasingly use and mainly by those who have already experienced the effect of sildenafil.

4. CONCLUSION

Sildenafil is an operational oral drug for erectile dysfunction. The toxicologist have detected the minor and major effects on various parts of the human body. Analytical techniques which is use to detect the concentration of the drug from the body are HPLC, spectrophotometer, GC-MS, LC-MS etc. Additional connected study decided out in the upcoming with sample confined in different conditions, will allow a quantitative report of the drug in these samples to be defined at the national level. The occurrence of contrary proceedings owed to sildenafil may be greater than primarily described.

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