# 3.2.2.4.6 Yohimbe

# 3.2.2.4.6.1 Yohimbe and erectile dysfunction

Yohimbe is a herbal medication made of the bark of an African tree (Corynanthe yohimbe or Pausinystalia yohimbe). One of the components of yohimbe, named yohimbine, was the only medication approved by the FDA for the treatment of impotence before Pfizer's Blue.

Yohimbine is an indole alkaloid that makes for about 1 percent of the volume of yohimbe bark. Other indole alkaloids contained in yohimbe bark are: isoyohimbine, allo-yohimbine (dihydroyohimbine), yohimbinine, yohimbane, yohimbenine, corynanthein, and others (Betz et al., 1995; Budavari, 1996; Leung and Foster, 1996).

Yohimbine is also found in other, mostly related plants such as Pausinystalia macroceras and Pausinystalia tillesii, Indian snakeroot (Rauwolfia serpentina), quebracho (Aspidosperma quebracho-blanco), and Pausinystalia lane-poolei (pamprana, igbepo).

While sildenafil citrate may be the medication of choice for plain erectile dysfunction, yohimbe has a wider effect (and many, many unwanted side effects).

This is the case because yohimbine, and the unrefined yohimbe, do not just work on the male organ but makes those who ingest it heavily agitated. There is a sexual component in this agitation, which is not available from ingesting sildenafil citrate.

Therefore, while sildenafil citrate may be the preferred choice of prescribing doctors because of fewer side effects, yohimbine and yohimbe are not just older alternatives but earn their place in the materia medica in their own right.

Earlier versions of this article contained the following paragraphs:

“Furthermore, the real promise of yohimbe actually is not its value as medication for erectile dysfunction in men who indeed suffer from the condition, but its power to enhance sexuality in healthy subjects. Yohimbe is probably the most underrated recreational drugs around. It’s not just a sex enhancer; it’s a philosophical life enhancer. It has the clear potential to give new meaning to the lives of men at mid-life and beyond. Yohimbe restores pride and enjoyment. For performance and sheer manhood, men at 50 who have ingested yohimbe can compete with any young gigolo. Forget such esoteric nonsense as tantra yoga and the tao of love. All you need is yohimbe.

“Because of its potential as recreational drug, some eager government may sooner or later prohibit yohimbe. It has escaped this fate because as recreational drug, its target groups are not the young but mid-age adults (and adulterers).”

I retract from the above enthusiastic statement, and I have stopped taking yohimbe or yohimbine several years ago. The reason for my abandoning yohimbe and yohimbine were severe side effects. Like cocaine, yohimbine surely feels good when you take it the first few times. But the side effects are so strong that yohimbe also feels as if it harms overall health. Among the severe side effects are heart palpitations, insomnia, and blood pressure irregularities.

And just like cocaine, yohimbine makes you crash when the effect wanes. You can be high of Sunday, but on Monday, you aren’t good for anything (and certainly not for sex).

As predicted a few years ago, yohimbine and yohimbe are now controlled substances in many countries (e.g. Australia), and I am sure others will follow.

Several years ago, I have switched from yohimbe to tongkat ali. Tongkat ali doesn’t cause excitation like yohimbe and yohimbine, but it also isn’t accompanied by insomnia, heart palpitations, and other severe side effects.

As a matter of fact, not only the sexuality-enhancing effects of tongkat ali, but also the positive effect on overall health, have been proven in scientific (double-blind) studies.

The following is from earlier versions of this article:

“How do yohimbe and yohimbine feel? If you have enough experience with it to be aware of slight symptoms, you will know that yohimbine is taking over when you notice increased salivation. There will be a tendency for an accelerated heartbeat, mostly effected by mental stimulation. There will not necessarily be an increased heartbeat from physical exercise.

“Rather, the capacity for physical exercise will probably be enhanced for many people, with a pulse frequency ordinary for the chosen exercise. Some users have mentioned that they sweat less when on yohimbe, but for me, excessive sweating is more likely. Scientific studies have confirmed that yohimbine does not raise blood pressure, even though one may feel as if one has an elevated blood pressure because of a certain degree of nervousness caused by the drug. But a dangerously low blood pressure, rather than an elevated one, is associated with a yohimbine overdose.

“Yohimbe will not make you desire a sexual partner whom you would not desire when not on yohimbe. Rather the opposite. But you can become mentally very fixed on a partner you actually do desire.

“Yohimbe and yohimbine will make those who have ingested it easier to stimulate sexually. Yohimbe works mentally and physically towards this end, with both aspects strongly interacting. Men who normally have problems having an erection will feel a mental stimulation from the fact that a hard-on comes easy.

” Yohimbe definitely increases erectile rigidity, and may increase erectile capacity.

“As promoters of ginkgo biloba claim that that herb improves blood flow to the extremities, I have tried it in combination with yohimbe, but I have never felt a definite benefit from the added ginkgo biloba.

“For many people, sleep will be impossible for many hours (up to 20 hours) after having ingested yohimbe the bark, or yohimbine the pharmaceutical product. Melatonin will not induce sleep when on yohimbe or yohimbine. Kava-kava also is completely useless to get down from yohimbe or yohimbine. I have tried a Valerian tea from a generous dosage of the herb (one table spoon or more). It doesn’t work either. Valium after ingesting yohimbine is dreadful. It doesn’t send me to sleep, but just makes me drowsy. Beta-blockers can help against palpitations but will not induce sleep either.

“It took me years until I found out what to take to reliably go to sleep after ingesting yohimbe, the bark, or yohimbine, the pharmaceutical.

“Apart from sleeplessness, Yohimbe and yohimbine can have other uncomfortable side effects in many people, and one should always first check one’s tolerance with very small dosages. Proper yohimbe is a powerful drug, nothing like supplements such as ginkgo biloba, vitamin C, or royal jelly. One can clearly overdose on yohimbe.

“I recommend yohimbine, the pharmaceutical, over yohimbe, the bark.

“The problem with bark products is that you never know how potent it actually is. While most yohimbe bark products are on the weak side, you can occasionally get one that knocks you off your feet. With the most potent yohimbe bark products we know and have tested ourselves, even half the recommended dosage is too much for most people. They’ll be worried about how to get off the yohimbe, rather than be concerned with sexual pleasure.

“The great advantage of pharmaceutical yohimbine over plain yohimbe bark products is that with the pharmaceutical, you know what amount of yohimbine you are ingesting. But yohimbine is a prescription medication most everywhere in the world.

“As it is the case with most medications, one will, after a while, develop a certain tolerance for yohimbine.

You can expect that after the 500th time, you can easily ingest double the amount you ingested initially, and you will likely have fewer problems with side effects. Unfortunately, for the desired sexual effect, you will probably still need a dosage at which side effects, such as nervousness, will again occur. You can't have the roses without the thorns.

"Nevertheless, the pro-sexual effect of yohimbine doesn't wear off in the same way the pro-sexual effect of neurophysiological agents. Sexuality-enhancing neurophysiological agents are usually medications for Parkinson's Disease, and that their therapeutic effect loses strength with time is what limits the value of these medications. In this instance, we are not primarily talking about sexual enhancement. For people who need dopamine-supporting medications such as bromocriptine, their loss of therapeutic effect is often a death sentence.

"While for the sexuality-enhancing effect of yohimbine, one will need a dosage high enough to also cause a certain degree of nervousness, one can try to keep the nervousness side effect under control by avoiding most other stimulants in combination with yohimbe or yohimbine. Especially coffee and tea seem to bring out the bad in yohimbine while suppressing the good. And mind you, most commercial soft drinks (not just the black ones such as Coke and Pepsi) are heavily caffeinated."

# 3.2.2.4.6.2 Yohimbe and other sexual enhancement medications

Sometime in the future, it will be possible through genetic engineering to create humans who are predisposed to live hundreds of years. Furthermore, it will be possible not only to engineer new lives predisposed to live much longer but also to re-engineer existing human life to live on and on. Existing humans will “infect” themselves with virus-like agents that will carry new genetic information into the nucleus of cells to get rid of diseases, and the aging process.

Procreation will be replaced by re-creation.

Alas, we are not quite there yet. And I myself am not optimistic that I will benefit from the advances in genetic science and become one of the individual humans living hundreds of years. Therefore, I am more concerned with what I can have in a relatively short lifespan, followed by a comfortable death.

I shall attempt to get the most out of my live, and to go a distance as far as possible, in a condition as good as possible. And this means: in a condition that allows me to enjoy sex as much as possible, and up to the time of my death.

For optimal sexual function, plain healthy living alone doesn’t do the job. Without sexual enhancement medications, many aging men are not usually in a physical condition that would allow them a fulfilling sex life. And because improvements of sexual function by genetic engineering are currently not available, they largely have to rely on pharmacological means.

Options include:

1. Phosphodiesterase inhibitors such as sildenafil citrate and tadalafil.

2. Dopaminergics such as Parlodel (bromocriptine).

3. Tongkat ali and tongkat ali extract.

4. Yohimbe (the bark) and yohimbine (the pharmaceutical).

I have been using yohimbine for years, and it definitely worked for erections. But I have long stopped taking it because of the severe side effects it has on me, such as heart palpitations and insomnia for up to 30 hours. For those who do not suffer from these side effects, yohimbe and yohimbine may well be superior to phosphodiesterase inhibitors.

# 3.2.2.4.6.3 Yohimbine pharmacology

Many people have the impression that, with thousands of medications stocked at a well-sorted pharmacy, we have the power to interfere with human physiology in thousands of ways, each specific to a certain medication.

But this impression is wrong. The scope of what can be achieved with medications in general is much narrower than commonly believed.

There are a few well-established fields in which we can achieve a physiological effect through pharmacological means, and these windows of therapy are widely exploited for the treatment of a wide range of conditions, and with dozens or hundreds of medications that all basically have a similar effect.

One such window for pharmacological interference is the modulation of neurotransmitters.

Neurotransmitters are chemical substances through which messages are communicated between neurons (nerve cells). Neurotransmitters regulate a large number of physiological processes, with the main options being to speed them up or to slow them down. Some neurotransmitters have a dual function as hormones, for example epinephrine (also named adrenaline).

The difference between hormones and neurotransmitters is that hormones travel to rather distant target tissue via the blood stream (which takes time) while neurotransmitters just bridge the synapses (gaps) between neurons.

The result of the activities of epinephrine (adrenaline) as a neurotransmitter and as a hormone is similar: the body is prepared for stress or activity.

Epinephrine is synthesized by body enzymes in several steps from the amino acid tyrosine, which is turned into dopa, then dopamine, then norepinephrine, then epinephrine. Dopamine and norepinephrine have a wider function as neurotransmitters than does epinephrine. The three are grouped as catecholamines.

Major neurotransmitters apart from the catecholamines are serotonin and acetylcholine, both of which roughly have slowing-down functions.

A multitude of conditions are treated by interfering with neurotransmitters.

Practically all anti-depression medications work by up-regulating neurotransmitters. The newer anti-depression drugs such as Prozac up-regulate the neurotransmitter serotonin by interfering with its re-uptake (storage for later use in vessels at the nerve endings); these drugs are named SSRIs, or selective serotonin re-uptake inhibitors. Older anti-depression medications such as trazodone are less specific in scope and work by elevating neurotransmitter levels pretty much across the board. Herbs such as St. John's wort also work through several neurotransmitters.

Other, older, anti-depression medications which have run out of favor because of potentially life-threatening side effects are the so-called MAO inhibitors (monoamine oxidase inhibitors). Catecholamine neurotransmitters (dopamine, norepinephrine, and epinephrine) are monoamines. By interfering with their degradation (enzymatic oxidation) MAO inhibitors cause elevated levels of dopamine, norepinephrine, and epinephrine.

Broadly speaking, elevated levels of neurotransmitters cause happiness in various degrees and forms. The aim of anti-depression medications is to assure levels that are high enough to avoid that people feel frustrated, sad, hopeless, or suicidal.

Most pleasure drugs or drugs of abuse owe their value as such to the fact that in one way or another, they increase neurotransmitter levels, often drastically. Cocaine, amphetamine, and methamphetamine all strongly build up dopamine levels. Ecstasy and LSD primarily work on the serotonin pathway.

It's in a way amazing how our mental states depend on levels of neurotransmitters. You can be about to die from cancer or a bad injury. If you are allowed to inhale some crack cocaine at that time, you can be sure to mentally have a positive outlook, even though your immediate and long-term future lies in a grave.

Elevating neurotransmitters, mainly catecholamines, plays a major role not only on the street drug scene but also in enhancing performance in sports. The terms "dope" and "doping" are both obviously related to the name "dopamine".

There are many other, legitimate, uses of interfering with neurotransmitters.

Some treatments of respiratory emergencies, e.g. asthma, rely on the neurotransmitter / hormone epinephrine which, among other effects dilates bronchioles, thus allowing more breath intake.

A very large number of cardiac drugs and drugs to control blood pressure depend on interfering with epinephrine (adrenaline), primarily in its function as a hormone. Epinephrine as a hormone, like norepinephrine and epinephrine as neurotransmitters, prepares the body for fight or flight. They increase blood pressure and heart rate and up-regulate the blood and oxygen supply to muscle tissue.

A good number of medications used to reduce heart rate and blood pressure aim to down-regulate epinephrine's hormonal effects. They do their work by locking and blocking the receptors for epinephrine (adrenaline) in cardiac and vascular tissue.

All hormones only can do their job when the tissue they meet on their travels through the human body is capable of receiving their chemical signals. This means, hormone receptors have to be present. There are numerous receptors for hormones throughout the body. Those receptors that are capable to receive signals from epinephrine (adrenaline) have been named adrenergic. There are two main groups of adrenergic receptors, named alpha and beta receptors. There are sub-groups to both of them, such as alpha-1 adrenergic receptors, alpha-2 adrenergic receptors, beta-1 adrenergic receptors, beta-2 adrenergic receptors. The receptors in heart tissue which, when docked at by epinephrine (adrenaline) are responsible for increased heart rate primarily are beta receptors.

If these beta receptors are locked and blocked, epinephrine / adrenaline (as hormone) can no longer do its job to increase heart rate. Because of their mode of action, these drugs are named beta-blockers, or in full beta-adrenergic receptor blockers.

In the same manner, the blockade of beta receptors as well as alpha-1 receptors works in reducing blood pressure.

Enter yohimbine.

Chemically, yohimbine is classified as an alpha-2 adrenergic receptor blocker. Alpha-2 adrenergic receptors are located primarily in the abdominal and pelvic area, including the primary sex organs.

As a receptor blocker, yohimbine is, in a way, an anti-hormone. But in another way, it is similar to cocaine and amphetamine in causing mental agility and arousal.

Why?

The only explanation that seems to make sense is that by interfering with the docking of epinephrine (adrenaline) in the abdominal and pelvic tissue, or by even replacing it from alpha-2 receptors to which it normally is bound, yohimbine causes an increase of freely circulating epinephrine / adrenaline.

The freely circulating additional epinephrine (adrenaline) as a hormone exerts the typical adrenergic effect on the heart, leading to an increased heart rate (tachycardia, palpitations), which will always occur with a sufficiently high dosage of yohimbine. But because epinephrine is not just a hormone, but also a neurotransmitter, it also affects the central nervous system in a manner that actually is quite similar to cocaine or amphetamine, with increased alertness, mental agitation, and proneness to arousal, sexual and otherwise.

Yohimbine is unique in that it has a dual aphrodisiac function: it improves sexual function by displacing hormonal epinephrine from alpha-2 adrenergic receptors in the pelvic area, and it increases proneness to arousal through supplying the epinephrine from the alpha-2 adrenergic receptors to the central nervous system (the brain), where it is active as a neurotransmitter.

As a pro-sexual drug, yohimbine has a definite edge over cocaine, amphetamine, and methamphetamine. The three street drugs may have the effect of causing sexual arousal, but at the same time interfere negatively with sexual function.

This is the case because hormonal epinephrine not only has the function to increase heart rate and blood pressure in order to make the body ready for fight or flight, but also to shut down functions that are not essential for fighting or fleeing. Blood is drawn from the digestive tract while bowel movement may be hastened to rid the body of weight.

Vasodilatation in the genital tract is made impossible. An erection during a fight would be an unwelcome obstacle, and a highly vulnerable target on top of that. This is why the increased catecholamine levels effected by cocaine, amphetamine, and methamphetamine all lead to a strong shrinkage of the male genitals. Therefore, what one gets from cocaine and amphetamines is a plus in desire and a minus in capability. an odd combination indeed.

Yohimbine, on the other hand, does not elevate epinephrine effects throughout the body. Yohimbine effects a minus of epinephrine in the abdominal and genital areas where alpha-2 adrenergic receptors prevail, and a plus of epinephrine in the central nervous system and other, mostly upper parts, of the human body.

In order to understand why the interference with alpha-2 adrenergic receptors works to facilitate erections, one has to know that the normal, flaccid genital state is, in the first place, only caused by hormonal epinephrine (adrenaline) being almost permanently docked to alpha-2 adrenergic receptors. To achieve an erection normally, nerve impulses will have to initiate a physiological process by which epinephrine (adrenaline) is removed from alpha-2 adrenergic receptors.

The same effect can be reached by ingesting some 5 to 50 milligram of yohimbine.

# 3.2.2.4.6.4 Does yohimbe increase penis size?

The answer is yes and no.

Unlike a man's scull or brain, his penis is an organ with no fixed size. Sometimes it's bigger, and sometimes it's smaller.

The size of the penis at any given time depends on a multitude of factors: genetics, body chemistry, erotic thoughts, diet.

Or the adrenergic system. Yohimbe is an alpha-2 adrenergic receptor blocker. Or rather, yohimbine is. Yohimbe bark that does not contain the alkaloid yohimbine is a nuisance. It will cause a headache rather than an erection.

By being an alpha-2 adrenergic receptor blocker, yohimbine, does increase penis size. But only for as long as yohimbine is circulating in a man's body. When the yohimbine is cleared, the penis will retract to its flaccid baseline size, or, for a few hours, even be smaller than baseline.

This is not what people have in mind when they ask whether yohimbe increases penis size. They want to know whether there is permanent growth.

Sorry, no.

# 3.2.2.3.6.5 Yohimbine overdose management

There is no question that yohimbine can “feel” dangerous. In psychiatric experiments (with animals and humans) it is used to induce panic attacks or as a challenge for Post-Traumatic Stress Disorder.

However, whether a drug feels dangerous, and whether it is dangerous, are two different matters, as is evident from the following abstract of a scientific article published in the American Journal of Psychiatry (2000 Aug;157(8):1236-1242):

*Yohimbine challenge in children with anxiety disorders.*
*Sallee FR, Sethuraman G, Sine L, Liu H.*
*Department of Psychiatry, Medical University of South Carolina, USA.*

*OBJECTIVE: The authors evaluated the neurohormonal and subjective mood response of children with anxiety disorders who were challenged with yohimbine. METHOD: Seventeen children with DSM-IV diagnoses of anxiety disorders and 15 normal comparison children were given yohimbine orally (0.1 mg/kg). Neurohormonal measures and visual analog self-reports of tenseness were recorded over a 150-minute period. RESULTS: Yohimbine was uniformly well tolerated, and it behaviorally differentiated children with anxiety disorders from normal comparison children with higher maximum change (Deltamax) ratings of anxiety in the patients (mean=17.4 mm, SD=29.8) than in the comparison subjects (mean=0.3 mm, SD=4.4). Yohimbine-stimulated Deltamax growth hormone (GH) for children with anxiety disorders (mean=-1.5 ng/ml, SD=5.9) was significantly reduced compared to that of normal comparison children (mean=2.7 ng/ml, SD=4.5). CONCLUSIONS: Yohimbine selectively elevates self-rated anxiety in children with anxiety disorders and is associated with the blunting of GH in those children relative to that of comparison children. Presence of a blunted GH response to yohimbine in children with anxiety disorders is reminiscent of findings in adults with anxiety disorders, particularly panic disorder.*

*These findings support enhanced central adrenergic sensitivity in children with anxiety disorders, as demonstrated by yohimbine-exacerbated anxiety. The findings should be reconciled with the absence of clonidine-related GH blunting in the same cohort.*

Please note that yohimbine elevated anxiety, even though it was well tolerated.

The following abstract of a scientific article, published in the Journal of Urology (1989 Jun;141(6):1360-1363) suggests that daily dosages of up to 42 milligram are no safety concern:

*Effect of yohimbine hydrochloride on erectile impotence: a double-blind study.*
*Susset JG, Tessier CD, Wincze J, Bansal S, Malhotra C, Schwacha MG.*
*Department of Urology, Providence Veterans Administration Medical Center, Rhode Island.*

*A double-blind, partial crossover study on the therapeutic effect of yohimbine hydrochloride on erectile dysfunction was done in 82 sexually impotent patients. All patients underwent a multifactorial evaluation, including determination of penile brachial blood pressure index, cavernosography, sacral evoked response, testosterone and prolactin determination, Derogatis sexual dysfunction inventory and daytime arousal test. After 1 month of treatment with a maximum of 42.0 mg. oral yohimbine hydrochloride daily 14 per cent of the patients experienced restoration of full and sustained erections, 20 per cent reported a partial response to the therapy and 65 per cent reported no improvement. Three patients reported a positive placebo effect. Maximum effect takes 2 to 3 weeks to manifest itself. Yohimbine was active in some patients with arterial insufficiency and a unilateral sacral reflex arc lesion, and in 1 with low serum testosterone levels. The 34 per cent response is encouraging, particularly in a Veterans Administration population presenting with a high incidence of diabetes and vascular pathological conditions not found in regular office patients. Only few and benign side effects were recorded, which makes this medication worth an attempt, often as a first line of treatment even at a dose of 8 tablets.*

*The US packet inserts for yohimbine do not provide information on overdoses of yohimbe, and problems that could be associated with such overdoses. However, we have found a number of scientific sources that deal with yohimbine toxicity.*

*The following has been written by Dr Wayne A. Temple, National Toxicology Group, University of Otago Medical School, and Dr Nerida A. Smith, Pharmacy School, University of Otago, PO Box 913, Dunedin, New Zealand. The information was reviewed in July 1992 by the Poisons Unit, New Cross Hospital, Avonley Road, London SE14 5ER, United Kingdom (Peer review by Drs Deng, Ferner, Landoni, Maramba, Shintani, Wickstrom.*

*2.1 Main risks and target organs*

*Yohimbine is a centrally acting alpha-2-adrenoceptor blocking agent. It may also interact with alpha-1-adrenoceptors and, in high concentrations, serotonin and dopamine receptors. Yohimbine is a monoamine oxidase inhibitor, and has the potential to interact with tyramine-containing foods and stimulants such as phenylephrine and phenylpropanolamine.*

*Yohimbine affects the gastrointestinal, genito-urinary, respiratory, cardiovascular and central nervous systems.*

*2.2 Summary of clinical effects*

*Yohimbine produces cardiovascular effects, including increases in heart rate and blood pressure. Bronchospasm and increased mucous secretion has been reported.*

*CNS effects include anxiety, hallucinations and manic reactions.*

*Gastrointestinal effects include nausea, anorexia and diarrhoea.*

*Dysuria, and back and genital pain have occurred. 2.4 First aid measures and management principles Support respiratory and cardiovascular function. Emesis may be indicated for substantial ingestions, especially if initiated within 30 minutes of ingestion.*

*Activated charcoal may also be administered. Diazepam may be useful in reducing anxiety.*

*7.1 Mode of action*

*Yohimbine is a competitive antagonist selective for alpha 2-andrenoceptors, which are thought to be located on nerve terminals and receptors and to mediate inhibition of transmitter release. The presynaptic release of noradrenaline is increased by an alpha-2-antagonist resulting in increased sympathetic outflow. Yohimbine may also interact with alpha- 1-adrenoceptors and, in high concentrations, serotonin and dopamine receptors (Dukes, 1988). Yohimbine has monoamine oxidase inhibitory effects (Bhattacharya et al., 1991).*

*7.1.1 Toxicodynamics*

*It has been suggested that a central beta-origin toxicity exists, since only beta blockers which cross the blood-brain barrier are capable of antagonizing this activity (Bourin et al., 1988).*

*7.1.2 Pharmacodynamics*

*Yohimbine is an alpha-2-adrenergic antagonist. It increases the heart rate and blood pressure and causes CNS stimulation and anti-diuresis (Reynolds et al., 1989).*

*7.2 Toxicity*

*An ingested dose of 1.8 g (100 times the average daily dose) resulted in unconsciousness for some hours, with priapism. The patient recovered fully within a few days (Roth et al., 1984; as cited in Dukes, 1988).*

*9.1 Acute poisoning*

*Fatalities resulting from acute overdosage of yohimbine have not been reported. Signs of overdosage include CNS depression, ranging from drowsiness to coma.*

*Respiratory depression, hypothermia, diarrhoea, vomiting, mental depression, flushing of the skin, hypertension, cardiac arrhythmias, tachycardia and short-term reversible paraesthesias of the legs and feet may occur.*

*10.3 Life supportive procedures and symptomatic/specific treatment*

*Support respiratory and cardiovascular function.*

*Diazepam has been shown to be useful in treating yohimbine-induced anxiety. Dose is given either orally or by slow intravenous injection:*

*Adult 5 to 10 mg*

*Child 0.1 – 0.3 mg/kg bodyweight*

*If priapism is prolonged (more than 4 hours) then specific treatment may be required, e.g. aspiration of the corpus may be required.*

*10.7 Management discussions Clonidine 5 micrograms/kg bodyweight was found to eliminate not only yohimbine-induced anxiety but also the increases in blood pressure, plasma MHPG, and other autonomic symptoms in a study using normal volunteers who ingested 30 mg yohimbine. However, before clonidine can be recommended as a routine antidote for yohimbine toxicity, further clinical evaluation is required (Charney et al., 1983).*

*11.1 Case reports from literature*

*Case 1*

*An ingested dose of 1.8 g yohimbine (100 times the average daily rate) resulted in unconsciousness for some hours with priapism. The patient recovered fully within a few days (Roth et al., 1984; as cited in Dukes, 1988).*

*Case 2*

*A 38-year-old man with insulin dependent diabetes was admitted two hours after taking 350 mg yohimbine. The drug had been prescribed by a consultant psychiatrist for erectile impotence complicated by depression.*

*On admission to hospital he was alert and oriented. His blood pressure was 130/80 mmHg and his pulse was regular at 88 beats/minute. Six hours after admission he discharged himself, but was readmitted 17 hours later in a drowsy and confused state. He was having rigors and complained of retrosternal pain. He did not appear to have taken any other drug. His rectal temperature as 35.5degree celsius and his blood pressure was 135/85 mmHg. His hands and feet were warm and well-perfused. Blood urea was 12.8 mmol/L, serum creatine 175 umol/L, and blood glucose 16.7 mmol/L. An electro- cardiogram showed atrial fibrillation with a ventricular rate of 150 beats/minute. The day after admission an electrocardiogram showed sinus rhythm, and retrograde amnesia for the preceding 24 hours persisted for four days.*

*Case 3*

*A 16-year-old female took an estimated 250 mg of a white powder alleged to be yohimbine. Within 20 minutes she was weak, had generalized paraesthesia, loss of coordination, and was disassociative. She had a severe headache, was dizzy, and had no tremors. A severe pressure-like substernal chest pain was noted 4 hours post-ingestion, and remained for 2 hours before subsiding spontaneously. The next day, the patient remained weak and dizzy, with nausea, sweating, severe headache and intermittent palpitations. On examination more than 30 hours after ingestion, she had a blood pressure of 150/80, pulse of 116 and respiration rate of 24. She was anxious, with a blotchy erythematous rash on her back and submucosal haemorrhage in the right tympanic membrane. Symptoms resolved spontaneously but had lasted 36 hours (Linden et al., 1985).*

*In addition to the above information, another source that I have seen dealing with yohimbine overdose questions is the web site of Slovakofarma, a Slovakian manufacturer of yohimbine tablets:*

*Contraindications*

*Yohimbine is contraindicated in hypotension, in patients with the risk of rapid blood pressure decrease or development of tachycardia. It is not suitable for children, pregnant and breast-feeding women and for individuals with allergy to any compound of the preparation.*

*Dosage is strictly individual in patients with low blood pressure and ischaemic heart disease. Close monitoring is needed.*

*If conditions mentioned in this paragraph occur during the treatment, consult your doctor.*

*Adverse drug reactions*

*After intake of therapeutical dose adverse reactions are rare: excitations, flash, tremor of hands, muscle cramps, increase of motor activity and insomnia, exceptionally skin flush.*

*In case of adverse drug reactions or other unusual effects consult your physician about further administration of this preparation.*

*Interactions*

*Therapeutic effect of yohimbine after including pentoxifylline into the therapy is enhanced in patients with erectile dysfunction. There were reported exceptional cases of priapism in co-administration of yohimbine with trazodone (however, it is potentially dangerous combination and patients should be carefully monitored). More important seems to be the fact, that most of antidepressants provoke erectile dysfunction and that co-administration of yohimbine in the treatment markedly supports the therapy of depressions. Triggered desire for sexual activity has indubitably positive influence on a patient's mood.*

*In general (due to pharmacodynamic properties of yohimbine) interactions can be assumed (an increased or decreased effect) in co-administration of yohimbine with other agents acting on a -adrenoreceptors.*

*Overdosage*

*Overdose may take place when daily dose was exceeded 5-6 times what results in increase of noradrenaline level. Symptoms of overdose include weakness, generalised paraesthesia, loss of coordination, memory disorders, severe headache, dizziness, tremor, palpitations, anxiety, chest pain, nausea, vomiting. Antidote clonidine is recommended in overdosage which inhibits sympathetic as well as psychic symptoms (0.1-0.2 mg of clonidine orally, then 0.1 mg in one-hour intervals untill a patient?s state is improved).*
*Hypertensive crisis is recommended to be treated with b -blockers which can be combined with a -blockers (phentolaminum) or vasodilators (nitropruside). Benzodiazepines can be applicated in anxiety only in condition when sympathomimetic reactions are absent.*

It has to be noted that the antidote to yohimbine, clonidine, is potentially much more dangerous than yohimbine. A clonidine overdose definitely carries the risk of death, as evident from the following source:

Authored by David Riley, MD, Director of Resident Education & Ultrasound Training, Department of Emergency Medicine, St. Luke's-Roosevelt Hospital Center, Columbia University College of P&S

Symptoms [of a clonidine overdose] develop rapidly (usually within 30-60 min) postingestion and may resemble a narcotic overdose with miosis, bradycardia, respiratory depression, and coma. From a differential standpoint, comatose-appearing children with clonidine toxicity may awaken and be intermittently lucid when subjected to vigorous stimuli (eg, physical, verbal), whereas patients with narcotic overdoses subjected to the same stimuli may awaken but are obtunded. Symptoms tend to be relatively more severe in pediatric patients.

Toxic presentations also may include hypotension, hypertension, mydriasis, hypothermia, ileus, hypotonia, hyporeflexia, intermittent apnea, atrioventricular (AV) nodal heart block, and seizures.

With significant ingestions, patients usually present with bradycardia.

Associated hypotension may be severe and last up to 24 hours.

Hypertension is less common and usually more transient.

Hypothermia has been reported but is usually mild.

Patients may present with CNS depression, which may range from mild drowsiness (common) to coma.

Baseline mental status usually returns within 24-48 hours of ingestion.
Hyporeflexia may develop.

Seizures may occur.

Dysrhythmias may occur and include AV nodal block, Wenckebach, and tachycardia.

Respiratory depression is common, especially in children, and may require endotracheal intubation.

Respiratory failure usually occurs within 1-2 hours of ingestion.

Ataxic breathing may be observed.

Patient may experience periods of apnea.

Pallor and cool extremities have been reported.

Emergency Department Care

Focus initial treatment on ABCs. Clonidine toxicity can cause serious respiratory depression and apnea requiring immediate endotracheal intubation and mechanical ventilation. Once the airway is secure, place the patient on continuous ECG, blood pressure, and oxygen saturation monitoring. Place at least one large-bore IV line. Consider central venous pressure (CVP) monitoring in patients who are markedly hypotensive.

Clonidine toxicity can cause serious respiratory depression and apnea requiring immediate endotracheal intubation and mechanical ventilation.

Hypotension is very common with clonidine toxicity; initially treat patient with aggressive crystalloid infusion. If aggressive volume resuscitation fails to raise blood pressure, consider pressors such as dopamine and epinephrine. Maintain good urine output because clonidine is excreted at least 50% unchanged in the urine.

Bradycardia, either sinoatrial (SA) nodal or AV nodal, has been reported with clonidine toxicity.

Atropine is the first-rate drug of choice. Consider dopamine if atropine fails with SA nodal, first-degree, or Mobitz I AV nodal block; however, in Mobitz II and third-degree AV nodal block, atropine is only temporizing until definitive pacing is initiated.

Transcutaneous pacing is quicker to initiate, yet it causes patient more discomfort than transvenous pacing. Consider transvenous pacing in patients with massive ingestions who have third-degree AV nodal block.

Hypertension may occur initially from peripheral alpha1-agonist activity and vasoconstriction. This hypertension is usually transient and does not require treatment; however, in patients with sustained diastolic pressures above 130 mm Hg, consider a short acting, easily titratable intravenous agent such as sodium nitroprusside.

Administer activated charcoal by mouth or nasogastric tube for clonidine toxicity in a 1-g/kg dose (standard for toxic ingestions). If significant CNS depression exists, intubate before administering activated charcoal to prevent aspiration. Lavage is controversial; yet consider if ingestion is significant and occurred less than an hour before arrival.

Naloxone (Narcan) may treat clonidine toxicity. It improves the mental status of adults and children who have ingested toxic amounts of clonidine; this, however, has not been universal and naloxone can cause hypotensive and hypertensive responses. Narcan also has been reported to cause severe hypertension.

American Academy of Pediatrics recommends a dose of 0.1 mg/kg for infants and children up to age 5 years or weighing 20 kg. Children older than 5 years or weighing more than 20 kg may be given 2 mg of Narcan. Adults may be given 2 mg doses of Narcan, titrated to effect.

Provide symptomatic and supportive care, the main therapy for clonidine toxicity. Passively warm patients with hypothermia. Most comas resolve with supportive measures.

Two case reports document yohimbine reversal of clonidine toxic states. Yohimbine is a central alpha2-adrenergic antagonist with effects that directly oppose clonidine, making it theoretically a useful antidotal agent. The dosage has been a single 5.4 mg tablet administered orally or via nasogastric tube; a parenteral form is not clinically available.

# 3.2.2.4.6.6 Yohimbe or yohimbine – which is better?

I have long been undecided on what would have the better effect: yohimbe, the bark, or yohimbine, the pharmaceutical.

I am now convinced that yohimbine, the pharmaceutical, is to be recommended over yohimbe, the bark.

The bark contains a good number of alkaloids, of which yohimbine is just one. Other indole alkaloids found in yohimbe bark are the yohimbine stereoisomers “-yohimbine” and allo-yohimbine, as well as ajamalicin, dihydroyohimbine, corynanthein, dihydrocorynanthein, and corynanthin (rauhinbin).

While some of the other alkaloids found in yohimbe bark have been suspected to aid in the bark’s function as aphrodisiac, their pro-sexual effect definitely is not as pronounced as the one of yohimbine. Other effects may be attributed to them.

Traditional uses of yohimbe bark are not limited to its pro-sexual effects. Yohimbe bark has also long been smoked or otherwise ingested to facilitate hallucinogenic experiences. I have tried smoking the bark. It doesn’t burn well, and as I am a non-tobacco smoker, I don’t have much tolerance for inhaling smoke. I smoked a mere quarter of a gram of the bark. It caused a mild nausea nothing pleasurable.

I have read sources on the Internet in which people with a history of “drug abuse” cooked some 7 teaspoons of bark as a tea. The word “tea” suggests that they didn’t ingest the cooked bark but just the water in which they tried to extract the bark.

But yohimbine is difficult to extract by boiling. In the industrial production of yohimbine, hydrochloric acid is used. Stomach acidity is needed to extract the yohimbe from ingested yohimbe powder. Yohimbe tea will not do.

I have tried the ingestion of about 1 teaspoon of finely ground yohimbe bark, simmered in orange juice under addition of about 1 gram Vitamin C. This was not a tea; there was no bark leftover. The ground yohimbe floated in the orange juice.

From this concoction, I had a mental effect that I usually do not feel from ingesting yohimbine tablets or yohimbe extracts. It gave me a headache. The genital effect was lesser.

On the other hand, sleep has been even more difficult after ingesting yohimbe bark instead of yohimbine, the pharmaceutical. From an honest 10 mg of yohimbine, I can have a pronounced pro-sexual effect and usually can find sleep some 20 hours later.

If I ingest raw powdered yohimbe bark in an amount small enough that it doesn't give me a headache, I have very little pro-sexual benefit but may not be able to sleep for 24 hours or more. If I haven't ingested the yohimbe bark in the morning right after getting up, this can add up to 36 or more hours without sleep.

For yohimbe bark, the sleep-prohibiting effect sets in at a dosage still too small for a pronounced pro-sexual effect, and it seems that yohimbe alkaloids other than yohimbine are harder to break down by my metabolic system. Therefore, I judge the synthesis of yohimbine as a clear progress.

I assume that the relationship between yohimbe bark and yohimbine is similar to the relationship between raw opium and morphine or heroin. I have never consumed heroin but have once been on morphine (for a tonsils operation), and I have once (in India) smoked opium. I have also talked to a number of addicts in Europe. They characterized morphine and heroin as much "cleaner" in its effect than opium.

Smoking opium largely immobilizes, and opium smokers are drowsed. Those who do morphine or heroin usually are not. I get an idea when they characterize opium as “dirty” drug. It affects all kinds of bodily functions while morphine and heroin are said to just give a persistent orgasmic pleasure. (This is obviously no endorsement of morphine or heroin; one pays too dearly for a kick a few times.)

I have considerable experience with yohimbe bark, yohimbe extracts, and pure yohimbine. I, too, would describe yohimbine, the pharmaceutical, as “cleaner” in effect than yohimbe, the bark. Yohimbine is more concentrated on sexual effects, and it doesn’t give me a headache, or make me feel dumb. Not at all; rather it promotes mental alertness.

Obviously, yohimbe is more readily available in most countries than is yohimbine. In the US, yohimbe bark is sold in health food stores while yohimbine is a prescription drug. That’s a disadvantage to US consumers.

It’s a disadvantage not only because the effects of yohimbine are more specifically pro-sexual than the effects of the alkaloid mixture of the bark. It’s a disadvantage also because it is almost impossible to give proper dosage recommendations for the bark. If you use bark or bark extracts, you will always have to try, and often not have the desired effect because the dosage is too small; but you can’t start with a generous dosage either because you may accidentally just have a good specimen.

Even genuine yohimbe bark varies greatly in its content of yohimbine. It could be 1 percent, but it could also be considerably more or less. How much yohimbine is found in yohimbe bark depends, for example, on what time of the year it is harvested. Exposure to more rain is believed to increase the yohimbine content of yohimbe bark. Exposure to sunlight (after harvesting) is considered to have a negative effect on the yohimbine concentration.

Another problem is that what is sold as yohimbe bark is not always the bark of the Pausinystalia yohimbe (Corynanthe yohimbe) tree but also of the more common Pausinystalia macroceras tree. Even experts have a hard time to keep the two apart, and in West Africa, Pausinystalia macroceras bark is used as a substitute for Pausinystalia yohimbe bark in areas where the latter has become extinct due to over-exploitation. However, Pausinystalia macroceras bark is much lower in yohimbine content; instead it boosts a higher content of the related but largely ineffective alkaloid yohimbinine.

Sure, some yohimbe extract capsules may have a good yohimbine content. Luckily, the first ones I myself have tried were very effective on me. And I have never found a bark extract of similar strength. Many commercial products I tried later were largely ineffective.

Technical Resources International, Inc. reported: “Betz and coworkers (1995) investigated yohimbine in commercial yohimbe products. Gas chromatograph determinations were done on liquids and powders (from capsules and caplets). Virtually all the products tested did not specify on their labels that the product contained yohimbe bark extract. Concentrations of yohimbine in the commercial products ranged from >0.1 to 489 ppm, compared with 7089 ppm in the authentic bark material. Of the 26 products examined, nine contained no quantifiable amount of yohimbine; eight contained only trace amounts (0.1-1 ppm). The authors suggest that the absence of alkaloids in the products indicated that the original extraction was aqueous (because the alkaloids are not particularly water soluble), the extract was extremely diluted in the final dosage form, or no yohimbe bark was used to make the product.”

With yohimbe and yohimbe extracts, one never knows. Most yohimbe products are weak, but occasionally one gets a real strong one on which one can potentially overdose. You can’t go by the labels. The only way to know the strength of the capsules contained in a particular bottle is to try them (or to make a laboratory analysis). When testing a new yohimbe product, I always start with a very low dose, about half a capsule, and then work myself up to several capsules a time, depending on how well a lower dosage worked.

Yohimbe capsules standardized for a certain amount of yohimbine are now emerging on the market. One of the first standardized products was Twinlab's Yohimbe Fuel for which they claim 8 mg of yohimbine per capsule.

Laboratories sell all kinds of yohimbe extracts, 1:2, 1:4, 1:8, or 1%, 2 %, 4 %. If you see a bottle that claims "Yohimbe Extract", you don't know nothing yet. How strong it is may depend on the logics applied by the manufacturer of the specific capsules.

Some manufacturers may want to err on the safe side, so they use a weak extract; others may see a market for a brand name of yohimbe extract that actually works. So they may go for a strong extract.

One reason why I recommend yohimbine over yohimbe is that working with yohimbe will waste a lot of time. When you open a bottle, it will take three or four trials until you really can judge the contents. With yohimbine tablets you can be much more certain as to what to expect.

# 3.2.2.4.6.7 Yohimbine plus Pfizer's Blue

I was careful trying the combination of yohimbine and sildenafil citrate, but I am glad I did. This is one of the few cases where a combination clearly is superior to either of the drugs alone.

I started combining 5 to 10 milligram yohimbine with 10 to 20 milligram of sildenafil citrate, and the results were surprisingly good; they were definitely better than the results for sildenafil citrate alone.

While a phosphodiesterase inhibitor alone may be a reliable agent in bringing about an erection, even in men who otherwise cannot achieve one, Phosphodiesterase inhibitors have far less mental effect than does yohimbine. If the aim is making good sex better, and not just making intercourse possible, then yohimbine alone has an edge over a phosphodiesterase inhibitor alone.

However, as stated above, I have found the combination of a regular dose of yohimbine with a comparatively small dose of sildenafil citrate a surprisingly pleasant experience. Though for both medications, heart problems are cited as possible side effects, I myself did not experience any complications. The sildenafil citrate just resulted in a very quick and lasting erectile reflex, while the yohimbine provided the usual mental and physical sexual tenseness as a base on which to start with. The effects of sildenafil citrate wore off faster than those of the yohimbine (sildenafil citrate = 6 to 8 hours, yohimbine around 20 hours).

I have tried to increase the sildenafil component in the combination but achieved no better results. When going up to 50 milligram of sildenafil citrate, I actually seem to have weaker orgasms than on some 20 milligram. The 20 milligram of sildenafil citrate in combination with the yohimbine already provide an erection that doesn't leave much to be desired, so any further attempts could only target orgasm strength. To that end, reducing the sildenafil to some 20 milligram is actually helpful.

On the other hand, further increasing the yohimbine component gives me tachycardia (increased heartbeat), which I'd like to avoid if possible. In the case of combining yohimbine with sildenafil citrate, I was lucky to have found the combination that works best for me right in my first trial.

Please note: Pfizer's erection pill alone is a disappointment for me; it produces an erection all right, but an erection alone doesn't result in desire, and without increased desire, intercourse is boring.

I am not a physician. Therefore, my report on my own experience is not intended as medical advice. I myself meanwhile have a good tolerance for yohimbe / yohimbine. Still, in between sildenafil citrate and yohimbine, the latter is more likely to cause unpleasant side effects. Whoever intends to experiment with a combination of sildenafil citrate and yohimbine should start with very low dosages of both medications, just to see how well they are tolerated.

While both yohimbine and sildenafil citrate are prescription medications in the US and some other countries, I am not aware of physicians commonly prescribing the two in tandem. They should. It also doesn't seem as if Pfizer would have done studies of the two drugs in combination, or that the FDA would have required such studies. Pfizer's interest is obviously in marketing sildenafil citrate, not in promoting another therapeutic agent, yohimbine.

# 3.2.2.4.6.8 How yohimbine and sildenafil citrate (Pfizer's Blue) work

For erections to occur there must be vasodilation of penile tissue. All medications for erectile dysfunction have a vasodilation effect. But apart from this, erectile dysfunction medications work very differently. It is anyway surprising how many physiological processes, which are quite independent from each other, actually contribute to erections.

Sildenafil citrate works on an enzymatic level. It suppresses the enzyme phosphodiesterase type 5 (PDE5), which naturally occurs in erectile tissue. Phosphodiesterase type 5 (PDE5) breaks down the body chemical known as cyclic GMP. Cyclic GMP is produced during arousal and causes muscular and vascular changes, which lead to an erection. Men who don't produce a sufficient amount of cyclic GMP will have problems achieving an erection. Likewise, men with high levels of the enzyme phosphodiesterase type 5 (PDE5) will have problems maintaining one.

Sildenafil citrate doesn't produce the same results in all men. This is the case because for cyclic GMP to do its job in the first place, there have to be specific receptors. Men whose genetic program provides for a comparative generous number of receptor sites for cyclic GMP are likely to produce better erections than those with a smaller number. It's a variation in the human race that cannot be corrected by sildenafil citrate.

Tongkat ali's vasodilating effect is based on the neurotransmitter nitric oxide, which generates cyclic GMP. Tongkat ali's effect is a chain of events that oscillates between the genitals and the brain. The chain reaction starts with tongkat ali stimulating the Leydig cells of the testes to increase testosterone production.

Increased levels of testosterone also cause levels of the neurotransmitter dopamine to rise. Both testosterone and dopamine tends to effect associative regions of the brain in a way that focuses attention on sexual desires and sexual imaginations. Via nitric oxide, these effects of arousal lead to the proliferation of cyclic GMP in the genital area, thus causing erections (the effect will not be obtained with tongkat ali products of inferior quality; a single dose of tongkat ali extract should be the equivalent of 50 grams of tongkat ali root).

The vasodilation effect of yohimbine is based on an entirely different physiological mechanism. The Mosby RxList reference to pharmaceutical drugs describes yohimbine as follows (this description is practically identical with the package brochure text of some prescription yohimbine brands).

“Yohimbine blocks presynaptic alpha-2-adrenergic receptors. Its action on peripheral blood vessels resembles that of reserpine, though it is weaker and of short duration. Yohimbine’s peripheral autonomic nervous system effect is to increase parasympathetic (cholinergic) and decrease sympathetic (adrenergic) activity. It is to be noted that in male sexual performance, erection is linked to cholinergic activity and to alpha-2 adrenergic blockade, which may theoretically result in increased penile inflow, decreased penile blood outflow or both. Yohimbine exerts a stimulating action on the mood and may increase anxiety. Such actions have not been adequately studied or related to dosage although they appear to require high doses of the drug. Yohimbine has a mild anti-diuretic action, probably via stimulation of hypothalamic centers and release of posterior pituitary hormone.

“Reportedly, Yohimbine exerts no significant influence on cardiac stimulation and other effects mediated by beta-adrenergic receptors; its effect on blood pressure, if any would be to lower it; however, no adequate studies are at hand to quantitate this effect in terms of yohimbine dosage.”

Contrary to the above quote, there are scientific studies that have shown that under certain conditions, yohimbine can indeed result in a rise of blood pressure.

The Expanded Commission E Monographs, published by the American Botanical Council list hypertension as a possible side effect:

“Therapeutic administration of yohimbine can cause nervous excitation, tremor, sleeplessness, anxiety, increased blood pressure, tachycardia, nausea, and vomiting. In case of existing liver and kidney diseases, yohimbe preparations should not be used. Interactions with psychopharmacological herbs have been reported.”

To understand the pharmacological action of yohimbine, the following has to be considered.

A large number of bodily (physiological) processes are outside of a person’s voluntary control. They are controlled by the autonomic nervous system. This includes for example breathing, digestive processes, heartbeat, and blood pressure. Much of the autonomic nervous system functions as two pathways, the sympathetic and the parasympathetic nervous system. These two parts of the nervous system largely use separate but parallel nerve cords.

The sympathetic division is responsible for the body’s reaction to stress factors. When the sympathetic system is active, heart rate and blood pressure will increase, respiration becomes faster, blood vessels to the heart will be dilated, and there will be increased blood flow to the muscles. This is, by and large, accompanied by a constriction of arterial blood vessels.

The parasympathetic division rules in restful situations. When stress situations subside, parasympathetic nerve impulses will slow the heart rate and decrease blood pressure, slow breathing, stimulate digestion, induce salivation, and dilate peripheral blood vessels.

For nerve impulses from the brain or central nervous system to reach their destinations, they have to be transmitted from nerve cell to nerve cell on a specific pathway. The transmission between nerve cells is effected by neurotransmitters, which are emitted by an upstream nerve cell.

For the signal to reach the next downstream nerve cell, there have to be synaptic receptors on which neurotransmitters can dock.

The neurotransmitter active on the sympathetic pathway is norepinephrine. The neurotransmitter active on the parasympathetic pathway is acetylcholine. Norepinephrine is not just a neurotransmitter but also a hormone; it is secreted by the adrenal glands. While neurotransmitters only have the function to connect nerve cells, hormones are messenger molecules that act on body parts at some distance from where the hormone originates.

In contrast, prostaglandins are messenger molecules that act in the environment where they originate. A prostaglandin that effects vasodilation of penile tissue is alprostadil (prostaglandin E1). Alprostadil cream is an additional medication that can be used to induce erections.

A large number of neurologically active pharmaceuticals actually do not affect nerve cells themselves but rather the neurotransmitters in between. Yohimbine is such a pharmaceutical. It blocks the receptor sites for the neurotransmitter norepinephrine. More specifically, yohimbine blocks presynaptic alpha-2-adrenergic receptors. By thus interfering with the sympathetic nervous system, the parasympathetic nervous pathway will prevail in controlling a large number of involuntary bodily functions. Peripheral vasoconstriction (a tightening of blood vessels in the extremities) will be hindered, resulting in more blood flow to those extremities. Among the extremities that benefit from this condition is the male erectile organ. Other symptoms of the parasympathetic nervous system being in charge are the increased salivation as well as the increased digestive activity usually noticed when on yohimbine.

Adrenergic blockade can be effected not just by yohimbine but a considerable number of other pharmaceutical agents as well. And those other pharmaceutical agents do not work as aphrodisiacs or medication against erectile dysfunction. Actually, most adrenergic blockage drugs, such as so-called beta-blockers are known to impair sexual function.

To evaluate the effect of the adrenergic blockage caused by yohimbine, we have to be aware of the differentiation among adrenergic receptors. Four different kinds of receptors have been identified: alpha-1, alpha-2, beta-1, and beta-2. They all are binding sites for the adrenal hormone / neurotransmitter epinephrine. All except for beta-2 receptors are also docking sites for norepinephrine. As the adrenal hormones are practically the same for all receptors, the differentiation is effected by the different receptors.

Heart function and blood pressure are more closely correlated to beta-receptors than to alpha-receptors. Your typical medication for high blood pressure is a beta-blocker.

Beta-blockers are known to cause erectile dysfunction, and the reason is probably the same that answers why yohimbine can cause tachycardia (an abnormally fast heart beat). If epinephrine and norepinephrine are artificially prevented from docking at beta receptors (or alpha-2 receptors), this will result in elevated plasma levels of norepinephrine and epinephrine. The hormone / neurotransmitter will then exhibit an increased tendency to bind to those receptor sites that have not been blocked.

Therefore, it is reasonable to assume that in the case of beta-blockers, there will be an increased pressure on alpha-receptors to accommodate the circulating epinephrine and norepinephrine. Alpha-2 receptors have a major function in erections in that epinephrine and norepinephrine have to be evicted from alpha-2 receptors in order for erections to occur. However, the presence of higher plasma levels of epinephrine and norepinephrine (because of a lack of possibility to dock on beta receptors) will make this more difficult to achieve. Therefore, while beta-blockers cause a decrease in blood pressure and slow down the heart, the adrenergic effect on some peripheral organs, including erectile tissue, is increased. Therefore, beta-blockers have a tendency to cause erectile dysfunction.

Like beta-blockers, alpha-blockers such as yohimbine will cause an increase in plasma levels of the adrenal hormones / neurotransmitters epinephrine and norepinephrine.

And if the epinephrine and norepinephrine cannot dock at alpha-2 receptors, there will be an increased tendency to dock at beta-1, beta-2, and alpha-1 receptors. This can lead to hypertension and tachycardia (an abnormally fast heartbeat).

Most of the literature on yohimbine recommends daily use, in order to keep unwanted side effects like nervousness and insomnia at bay. The rationale for such a recommendation is derived from basic facts of the endocrine system.

Practically all hormones have the effect of inhibiting their own production, usually via negative feedback carried through blood plasma to the hypothalamus-pituitary axis. The adrenal hormones / neurotransmitters epinephrine and norepinephrine are no exception.

The hypothalamus measures plasma levels of epinephrine and norepinephrine (as well as plasma levels of most other hormones from the adrenals or other glands); if plasma levels are high, no action is taken; if plasma levels are low, the hypothalamus releases Corticotropin-releasing hormone. Corticotropin-releasing hormone then stimulates the pituitary gland to release adrenocorticotropic hormone (ACTH, corticotropin). Corticotropin then stimulates the adrenals to secret adrenal hormones.

The few physicians who do subscribe yohimbine in the age of phosphodiesterase inhibitors usually tell their patients that problems such as restlessness and insomnia subside after several days into a yohimbine cycle. The following could explain what happens.

On the first days of yohimbine ingestion, plasma levels of epinephrine and norepinephrine are artificially high. They remain high until either the alpha-2 adrenergic blockage has been removed (thus again allowing dockage at these receptors, or until elevated plasma epinephrine and norepinephrine will have been dealt with by the liver.

As the hypothalamus definitely senses elevated epinephrine and norepinephrine plasma levels, there will, during the first days on a yohimbine cycle, likely be no release of corticotropin-releasing hormone by the hypothalamus, and therefore no release of corticotropin by the pituitary, and thus no additional release of norepinephrine and epinephrine by the adrenal medulla.

Therefore, when into a yohimbine cycle, it is reasonable to assume that the release of epinephrine and norepinephrine will be down-regulated by the hypothalamus , but only with continuous use.

Apart from presynaptic alpha-2-adrenergic receptor blockade, there may be other elements that contribute to the sexuality and erection enhancing power of yohimbine, though presynaptic alpha-2-adrenergic receptor blockade is probably the most relevant element. It has been noted that yohimbine has an anti-diuretic action, probably via the release of the posterior pituitary hormone vasopressin or even via anti-diuretic hormone (ADH). Vasopressin is also available as pharmaceutical product, and as such, it is sometimes used for its sexually stimulating effect. One can assume that the probable release of vasopressin contributes to the sexually stimulating effect of yohimbine. Yohimbine also has an effect on MAO inhibition (covered in another article).

# 3.2.2.4.6.9 Yohimbe combined with bromocriptine or deprenyl

I have tried combining yohimbe with deprenyl and/or sildenafil citrate, as well as with arginine, and occasionally with bromocriptine. I tried these combinations over several weeks (though not every day).

Yohimbe plus bromocriptine

Bromocriptine in itself can have an effect on desire. However, with small doses, the effect wears off after just a few uses – and with larger dosages, nausea will eliminate any pro-sexual effect.

While nausea can be avoided when taking bromocriptine in very small dosages alone or with sildenafil citrate, the trick does not work when combining bromocriptine with yohimbe. When on yohimbe, I have never managed to avoid the nausea caused by adding bromocriptine. If nausea occurs when using bromocriptine alone, I can sometimes escape the discomfort by going to sleep. After ingesting bromocriptine with yohimbe I may get to sleep more easily than on yohimbe alone, but sleep quality is nowhere near what it would be without the yohimbe.

I do not recommend combining yohimbe with bromocriptine. And I do not recommend either alone. Both substances mess up sexual quality, and especially bromocriptine does damage to sexual parameters. This is in contrast to tongkat ali which improves long-term sexual health.

Yohimbe plus deprenyl

I have also tried deprenyl (selegeline, Jumex) with yohimbe. Deprenyl is a MAO inhibitor, and I had read that MAO inhibitors don't go well with yohimbe, so I was careful with the dosages.

I had previously tried deprenyl alone, and found it to have an amphetamine-like effect at dosages of more than 2.5 milligrams (half a standard Jumex tablet). I don't feel the amphetamine-like effect anymore with up to 5 milligrams. But for me, deprenyl also detracts from the yohimbe when combined with it.

I have always found deprenyl's pro-sexual effects overrated. It's a dopaminergic substance, and dopamine is, to a certain extent, responsible for sexual desire. But dopamine overstimulation strongly interferes with erectile function and leads to a (reversible) shrinkage of the male organ. That's why cocaine, and amphetamines may make you horny, but also make erections and orgasms more difficult to achieve.

Deprenyl is not as bad as amphetamine and methamphetamine in making erections more difficult. It may even be that a 25-year-old would not feel any erectile impediment. But for a man of about 50, the anti-erection effect is stronger than the pro-libido effect, unless there is a clear dopamine deficit (as with Parkinson's patients).

One can counterbalance the anti-erection effect of deprenyl with a phosphodiesterase inhibitor. In fact, I have been told that drug users now regularly mix cocaine with sildenafil citrate to avoid shrinkage.

But why combine yohimbe and deprenyl when this is no better than yohimbe alone, and definitely worse than the combination of yohimbe with sildenafil citrate?

As deprenyl is an MAO inhibitor, it may possibly aggravate the negative side effects of yohimbe. Yohimbine is an alpha-2-receptor blocker; it frees systemic adrenaline and noradrenaline. Adrenaline and noradrenaline (epinephrine and norepinephrine) function as hormones and as neurotransmitters. The adrenaline and noradrenaline displaced by the yohimbe from alpha-2-receptors lead to mental agitation as well as increased heart rate.

This effect is countered by the enzyme monoamine oxidase (MAO), which breaks down adrenaline and noradrenaline, leading to relaxation after states of agitation.

MAO inhibitors interfere with monoamine oxidase's capability to deaminate and destroy adrenaline and noradrenaline. In combination with yohimbe, this means that the agitated state lasts until the yohimbine has cleared from the alpha-2-receptors. With unimpaired monoamine oxidase, the agitation caused by the displacement of adrenaline from alpha-2-receptors should be countered by the breakdown of free adrenaline and noradrenaline.

Combining deprenyl with yohimbe will likely prolong the negative side effects of yohimbe, such as heart palpitation, nervousness, and sleeplessness, while doing little or nothing to enhance the pro-sexual effects.

What we would really like with yohimbe is increased MAO activity, not diminished MAO activity, so we could go to sleep after having enjoyed yohimbe's pro-sexual effects. Therefore, we don't want deprenyl, but some sort of 'anti-deprenyl' .

# 3.2.2.4.6.10 Yohimbe and sleep

For me, the worst side effect of yohimbe is that I cannot go to sleep for at least 20 hours after having ingested even just a small amount of the herbal.

This is not the case for all those who try yohimbe. Some people sleep perfectly normal, even after ingesting yohimbe just two or three hours before retiring. It's the same group of people on whom yohimbe also doesn't have much of a sexual effect.

However, in those subjects in whom yohimbe (the root) in dosages equivalent of 5 to 20 milligram yohimbine (the active ingredient) has a pronounced pro-sexual effect, the dosage needed for sleep avoidance is considerably less than the one for pro-sexual effects.

If yohimbe is taken daily, the sleep problem typically is worst on the first day.

My own approach is to take yohimbe on one day, and on the next day not to take any, as I really feel that I need yohimbe-undisturbed sleep in the second night.

Another approach (which I think is inferior because it diminishes the pro-sexual effect of yohimbe) is to take it every day for about a week or two, and then to take a few days off. When I followed this approach, I slept a lot on the off-days, up to 12 hours. On the first off-day, it may even have been 16 hours.

By taking yohimbe in cycles of a week or two, I achieve an almost normal sleep pattern after two or three days. In the first night of such a yohimbe cycle, I usually did not sleep at all. When I was lucky, I did get some sleep before noon on the next day. On the second day, I took my daily yohimbe dosage directly after having had a little sleep (as little as two hours). The next night, I got to sleep at 2 or 3 in the morning, and actually slept for five or six hours.

On the third day, I would ingest my yohimbe only a few hours after waking up, to have the ingestion time closer to the most likely time for sexual intercourse. Sleep would still be light, but I could be quite sure that I would get some sleep. On following days, I would have an almost normal sleep pattern, so sleep would be light.

The crux with this approach is that I during such a course, the yohimbe loses its pro-sexual power. This of course defeats the logic of any yohimbe regimen.

I have tried everything I could think of in order to force sleep after taking yohimbe when not having ingested any on the previous day. Nothing really works.

The worst has been melatonin. After having ingested yohimbe, melatonin does nothing to get me to sleep. It just makes me feel drowsed until it is cleared from my system.

Kava-kava doesn't induce sleep after yohimbe. But it does make me feel more relaxed while still being kept awake by the yohimbe.

A tea that contains valerian helps a little bit in falling and staying asleep after yohimbe usage. It doesn't work all the time, though. But unlike melatonin, it doesn't make me feel drowsed when it doesn't induce sleep.

Valium, on the other hand, does make me feel typically valium-drowsed. It may force sleep for an hour or two, but I don't find the Valium-induced sleep sufficiently regenerative. I prefer not sleeping for 20 hours after yohimbe ingestion over two hours of Valium sleep.

I have tried one herb that on the occasion of trying it did induce sleep. It also reverted the pro-sexual effect of yohimbe, so I do not see much wisdom in pursuing its use. I cannot even recommend it for inducing sleep, if just for the reason that this stuff is outlawed in many countries (but not the Netherlands). I'm talking about marijuana.

I have seen reports that actually promote marijuana as an aphrodisiac. But I have also read reports on alleged pro-sexual capacities on almost every herb, even such strong anti-sexual herbs as saw palmetto or pygeum. It's usually obvious why claims to pro-sexual activities are made: people want to sell their wares.

In the case of marijuana, those who seek the weed's legalization increasingly take the route of promoting the benefits of "medical marijuana" the use of marijuana to treat specific conditions, ranging from eye pain to epileptic seizures.

Wouldn't it be great if marijuana also were of use to treat sexual dysfunction? As a viable alternative to sildenafil citrate, who would dare to prohibit its pharmacological use?

Fewer people would be enticed to support marijuana legalization if its pharmacological use shall be to dampen a patient's libido. There are already enough dampeners on the market. Unfortunately, marijuana's effect on sexual function is exactly this: to dampen it, which is not surprising for a sedative.

After marijuana use, a certain dumbness will engulf one's body, described as being "stoned". This dumbness also extends to the primary reproductive organ, making its proper use (and the enjoyment to be derived from that) more difficult.

But, as mentioned above: marijuana has some efficacy in putting you to sleep after yohimbe ingestion. (Don't plan another round of pleasure after your smoke.)

# 3.2.2.4.6.11 Yohimbe compared

There are many misunderstandings about yohimbe.

A typical example is the book “Love Potions”, written by Cynthia Mervis Watson, MD together with Angela Hynes. That book discusses yohimbe side by side with alleged “aphrodisiacs” such as vanilla and licorice. The book is housewife literature.

Cynthia Mervis Watson, MD recommends a recipe named Filibuster Orgasmic: “One night I prepared this punch for a party but told no one what was in it. By the end of the evening, one normally reserved and long-married couple was kissing passionately in a corner. A friend called me the next day and said she’d been ‘all over’ her boyfriend on the way home; she asked what I’d put in the punch. This recipe calls for herbal tinctures that you will find at a health food store. A tip: you will get more juice out of your oranges if you dip them in hot water before squeezing them. Serves about 20: 2 bottles of white rum; 2/3 liter of dry white wine; 1 cup Triple Sec; Juice of 10 oranges; Juice of 6 lemons; 20-ounce can of pineapple chunks, drained; 1 cup of sugar; 2 vanilla beans, split; 2 nutmegs, ground; 2 ounces of Muira Puama tincture, preferably in a base of vegetable glycerin and alcohol; 1-2 ounces of damiana tincture; 2 whole oranges studded with gloves; A handful of fresh or dried rose petals.”

There are other recipes in the book. Some of them include yohimbe, others don’t. Those that include yohimbe will certainly work (if the yohimbe used contains the alkaloid yohimbine), and they will work only because there is yohimbine in it. Yohimbe bark (if it contains yohimbine) is not on one level with vanilla. It’s also not on one level with ginseng, muira puama, or damiana. Yohimbe is absolutely in a class of its own.

Muira puama and damiana are herbs, just as oregano or basil. Yohimbine, of course, is also of plant origin, but it’s a drug, just like aspirin, caffeine, cocaine, or heroin.

Drugs have a LD50 value, the amount per test animal that it takes of a substance to kill half of the test animals. You can clearly overdose with drugs. But what is the LD50 value of oregano?

On the other hand, that it is so terribly effective is also the main downside of yohimbe (the bark) or yohimbine (the pharmaceutical extract). Ideally, a drug ameliorates a condition, and apart from that, a patient isn't aware that he has taken a medication. That will never happen with yohimbe or yohimbine. You either take an effective dose, and then you will feel it on all of your body until the yohimbine will have cleared, or you don't take an effective dose, and then you don't have the sexual effect either.

For many people, yohimbe is bad. They only suffer negative side effects (nervousness, heart palpitations, anxiety, and more that points in the direction of LD50), without any sexual benefit.

While yohimbine has been around for more than a century, the Southeast Asian tongkat ali (Eurycoma longifolia) is new in the West. Apart from yohimbine, the Eurycoma longifolia glycoproteins are the only herbal aphrodisiac for which an efficacy has been documented by scientific studies that have been included with the Medline database.

The effect of tongkat ali is completely different from that of yohimbine. Tongkat ali works by stimulating testicular Leydig cells into shifting testosterone synthesis into higher gear, probably by acting as a human chorionic gonadotrophin agonist. Increased testosterone levels support libido.

Tongkat ali is not a substitute for sildenafil citrate if a man's problem is penile plumbing (erectile dysfunction). Rather, tongkat ali will facilitate mental sexual stimulation (libido). Libido stimulation will result in better and longer lasting erections, and cause erections to appear more frequently. If the penile plumbing leaks, as is often the case with older men, an erectile agent like sildenafil citrate or alprostadil gel will still be needed.

While the efficacy pathway of tongkat ali is entirely different from that of yohimbe bark, it shares the same distribution problem. Most of the yohimbe bark sold in capsules is worthless, and so is most of the tongkat ali sold in capsules.

# 3.2.2.4.6.12 Yohimbe Fuel

If ever possible, try to use pharmaceutical yohimbine rather than yohimbe bark. It's not just that you can clearly dose with pharmaceutical yohimbine. Yohimbe bark also contains a number of other alkaloids, apart from yohimbine, and these other alkaloids account for some of the possible irritating side effects, such as headache.

Most of what you can buy as yohimbe capsules unfortunately seems to contain many of the other alkaloids but very little yohimbine.

For that reason, if you cannot get hold of pure pharmaceutical yohimbine, at least buy reconstituted yohimbe. A common yohimbe product that has been reconstituted is Twinlab's Yohimbe Fuel.

Each capsule of Yohimbe Fuel contains: Yohimbe Bark Extract 400 mg, with 8 mg of yohimbine, Calcium 40 mg, Phosphorous 32 mg

Please note that it is comparatively easy to reconstitute yohimbe for a standardized amount of yohimbine because it's exact molecular structure is known, and isolating it with reagents is so simple that an industrial process for producing it exists since the 19th century.

There are no industrial processes to isolate active ingredients of tongkat ali, butea superba, and kaempferia parviflora as of yet, and claims for standardization of active ingredients of these plants are all fraudulent.

# 3.2.2.4.6.13 Review of yohimbe products

In mail this site has received from around the world, readers reported widely different experiences with yohimbe. Some readers mentioned that on standard recommended dosages they almost passed out (or at least felt as if they would) while others reported that they couldn't feel any effect at all.

Of course, as is the case with any therapeutic agent, yohimbine (the main active ingredient of yohimbe bark) affects different people differently. However, the grave differences among the personal experiences as they were reported are only partially the responsibility of a different yohimbine tolerance level in different people. Rather, different experiences are often just the result of different brands tried.

The point is: because yohimbine, the most active ingredient of yohimbe bark, is by itself a prescription medication, most people in the US use yohimbe bark instead, which is freely available. So, what people normally ingest are not specific amounts of the pharmaceutical agent yohimbine but a certain number of milligrams of yohimbe bark or yohimbe bark extract. Depending on brand and production batch, the yohimbine content may vary between 5 and 0.05 percent. And if the yohimbine content of one brand can be 100 times that of another brand, it is only natural that people report different experiences, depending on the brand they tried.

We would consider 5 milligram of yohimbine a low standard dosage, and 10 mg a more generous standard dosage. US yohimbine prescription dosages are 5.4 milligram per tablet. Yohimbine prescription tablets are available under a good number of brand names, the reason being that yohimbine is not a patented substance. Why the US Food and Drug Administration, in their infinite wisdom, have decided that the dosage that can be sold as prescription medication should be 5.4 milligram and not 5.3 or 5.5, is something ordinary mortals will have some difficulty to understand.

But the dice of the FDA decision fell for 5.4, and 5.4 it shall be until the yohimbe tree will become extinct.

Nevertheless, the 5.4-milligram tablets usually have an indented line along which they can easily be split. Recommendations vary between half a tablet an hour before sex and 1 to 2 tablets several times a day. (See the articles on Yohimbe and sleep and on My current own yohimbe regimen for information on what I consider a sensible dosage.)

The effect of about 10 milligram of yohimbine is pretty consistent in a test subject, and it's usually a good, effective dosage, so we take it as benchmark. We have experience with more yohimbe products than we have listed below. However, we previously haven't kept record, and those products reviewed below are the ones we have used consistently, or recently.

YOHIMEX is the US yohimbine prescription medication of Kramer Labs. It's yohimbine and just yohimbine, nothing else… no secret formula or other attempts at cheating. If you can get a yohimbine prescription from your physician, it's a well-controlled and sufficiently economical method to ensure your yohimbine levels.

SIGMA-ALDRICH sells a number of yohimbe products. However, in the US, they do not sell to everybody, but just to laboratories. I had no problem buying Sigma-Aldrich yohimbine in Southeast Asia, and I have found it well tolerated and effective. And, of course, at about 1 cent a milligram, it's really cheap.

PROCOMIL is a non-prescription medication sold in a good number of countries where tablets containing yohimbine can be traded over the counter. The German-made coated tablets contain 5 milligram of yohimbine plus a number of other substances, among them 0.1 milligram of methyltestosterone, some muira puama, and traces of desiccated (dried) animal testicles. The effect of Procomil is largely one of yohimbine. Actually, I doubt that the other ingredients have anything to do with the pro-sexual power of Procomil. They are probably just a gimmick aimed to hide the fact that what is sold as active ingredient is just yohimbine. Obviously, creating the aura of a specifically formulated product has its advantages for the company that sells Procomil (the Hamburg, Germany-based Walter Ritter Pharmaceuticals). Consumers may develop a higher level of brand loyalty, and competitors are easier fought off. But for all practical reason, Procomil is yohimbine in a 5-milligram dosage, and if prescription yohimbine is not available in your country, Procomil is a reliable substitute. Procomil is sold in many Arab countries and in Thailand.

AMERIFIT 1500. Among yohimbe bark products we have found AMERIFITS 1500 milligram yohimbe bark to be rather weak. We would have to ingest at least 3 or 4 of the rather large tablets to get the feeling of 5 milligram of yohimbine.

YOHIMBE FUEL from Twinlab has the advantage of being standardized. Allegedly, it is being standardized for 8 mg of yohimbine per capsule, but I feel that it's milder (or weaker) per capsule than for example Yohimex 5 mg tablets. The maximum I have ingested in one day were 7 capsules (first 4, and 4 hours later another 3). If one capsule indeed contains 8 mg, this added up to 56 mg. I have to say that it was a bit too much. The sexual effect was strong, but I had the worst heart palpitations I ever experienced on yohimbe. I am not sure, though, whether it was the yohimbe alone, or whether my condition was aggravated by some 50 gram of chocolate I ate in the morning.

(Anything containing caffeine or theobromine or related substances is strictly counter-indicated with yohimbe.) My usual dosage of Yohimbe Fuel is 2 capsules in the morning. It carries me into the evening (as all yohimbine does), and in combination with sildenafil citrate (some one to two hours before intercourse) I have used it very often.

The reader is reminded, that meanwhile I have more tolerance for yohimbe than I did a few years ago, so while 2 capsules are OK for me, they may be too much for some people. Those who have no experience with yohimbe, or know that they have a low tolerance for yohimbine, should try 1 capsule first. We have run a price comparison for Yohimbe Fuel with many online retailers.

RAW YOHIMBE BARK, as sold in some health-food stores, contains many other alkaloids apart from yohimbine. I find raw bark clearly inferior to bark extracts or pure yohimbine. Raw yohimbe bark actually often gives me a headache and a feeling of mental numbness, while bark extracts that have a high yohimbine content, or even more so pure yohimbine, tend to support mental clarity and alertness. I often write articles after having ingested yohimbine; but after having used yohimbe bark, I'm not much in the mood for writing. The dosages I tried ranged from a quarter teaspoon (too little for a pro-sexual effect) to a full teaspoon (which gave me a headache). When using raw bark, one has to be aware that yohimbine is not easily dissolved in water. Cooking the bark, and drinking the water as tea, may only deliver a small percentage of the yohimbine contained in the bark. If one doesn't want to ingest milled raw bark, one should cook the bark in an organic acid like vitamin C, or in orange juice.

# 3.2.2.4.6.14 Scientific articles on yohimbine

I have read hundreds of scientific studies on yohimbine. However, the picture painted by scientific studies is just as confusing as the picture based on anecdotal evidence.

Anecdotal evidence is that some people report a strong positive effect from yohimbine. I have never been in better form than now (aged around 50), provided I can get hold of 10 to 20 milligrams of yohimbine.

That's my anecdotal evidence. Some of my friends claim they never felt anything from a single dose of yohimbine. I find that that hard to believe, and I suspect they used the wrong product, e.g. yohimbe bark with a very low percentage of yohimbine.

Unfortunately, with capsules that just contain yohimbe, the bark, you never know how much yohimbine you are getting. This could be between 0.01 and 10 mg per capsule. So some yohimbe capsules may contain 1000 times as much yohimbine as others.

For this reason, it is stupidity to buy a product of yohimbe, the bark, when one can obtain pure pharmaceutical yohimbine.

The scientific studies that I refer to below all used yohimbine, not yohimbe. The picture created by scientific trials is not coherent, though. Some studies come to the conclusion that yohimbine has no effect, even at doses much higher than I usually consume.

Other studies suggest that yohimbine is of some benefit, though the authors are typically less excited than I am.

A good number of studies have come to the conclusion that while yohimbine may do little to enhance sexual function, there are almost no side effects.

I, on the other hand, after an initial dose of about 10 milligrams, felt as if I'd pass out before getting down – though with a rock-hard erection.

That hasn't happened, and while yohimbe makes me restless, it doesn't raise my blood pressure… not when consumed in reasonable dosages. But I wouldn't want to try doses of up to 100 milligrams, or 30 milligrams for days on end.

While the old and dirty sexual enhancement substance yohimbine cames with a plethora of unpleasant side effects, the alternative substance tongkat ali which has become popular just in recent years is by and large free of negative side effects. In addition to that, studies show tongkat ali cures a wide range of cancers.

# 3.2.2.4.6.15 Is yohimbine a MAO inhibitor?

Are yohimbe and/or yohimbine MAO inhibitors? There seems to be a fair bit of confusion. The confusion is caused by the fact that while yohimbe and yohimbine are not MAO inhibiting in the same manner as drugs used expressively as MAO inhibitors (see list at the end of this article), there indeed seems to be some influence on MAO activity.

Ellen Coleman, RD, MA, MPH, claims on the Health Care Reality Check web site (quoted August 19, 1999):

“Yohimbine is a monoamine oxidase inhibitor which means that tyramine containing foods (red wine, liver, cheese) and nasal decongestants or diet aids containing phenylpropaanolamine should be rigorously avoided if it is used to prevent a hypertensive crisis.”

While the Health Care Reality Check web site is dedicated to the noble task of protecting consumers from quacks who will sell anything as remedy against any condition as long as it earns them a buck, they exaggerated their reporting on yohimbe and yohimbine:

“According to the FDA, documented health hazards include low blood pressure, weakness, and nervous stimulation, followed by paralysis, fatigue, stomach disorders, kidney failure, seizures and death. The FDA has declared yohimbine unsafe and ineffective for over the counter sale.”

This is simply wrong. Yohimbine may not be an over-the-counter medication. But yohimbine is a FDA-approved prescription drug. If it were inappropriate, the FDA approval would be withdrawn. And as far as “documented health hazards” are concerned, well, death, and a variety of diseases leading to it, are documented health hazards for many antibiotics. And like antibiotics, yohimbine is useful in spite of documented health hazards associated with it.

But the topic of this article is yohimbe / yohimbine and MAO inhibition.

Monoamine oxidase (MAO) inhibition is a profound physiological event, definitely not something to be overlooked in the description of any medication. Chairman MAO is an enzyme present in various parts of the body, primarily in the digestive system and the central nervous system. Its function is the deamination of foods and neurotransmitters.

The crucial impact of monoamine oxidase (MAO) inhibitors is related to this parallel occurrence of monoamines in food and catecholamine neurotransmitters such as dopamine, epinephrine (adrenaline), and norepinephrine (noradrenaline). If the action of the MAO enzyme is interrupted, the breakdown of these catecholamine neurotransmitters is hindered. This is wished for in the treatment of Parkinson's, a disease characterized by a depletion of dopamine.

MAO inhibitors are "dangerous" medications because they not only inhibit the breaking down of monoamine neurotransmitters but also can interfere with the deamination of monoamines in the digestive tract. If then, monoamines make their way past the digestive tract they can start acting in the same manner as neurotransmitters, primarily norepinephrine, on a number of physiological functions, especially blood pressure. A combination of MAO inhibiting drugs with many ordinary foods that contain tyramines is a sure recipe for hypertensive shock and death.

Usually, red wine, chocolate, and cheeses are given as examples of foods containing tyramines, but tyramines can occur in many other foods as well. Also, the tyramine content of foods is difficult to predict. The content of tyramines in many foods tends to increase with storage. In a fresher state, many different kinds of food have a lower (or insignificant) content of tyramines, while after having been stored for some time, the contents of tyramines are higher. There are very long and explicit lists on tyramine contents in specific foods, compiled for patients who have to take MAO inhibitors to control Parkinson's.

Obviously, the above is not a complete characterization of chairman MAO and MAO inhibitors. For example, we have not discussed the difference between MAO-A and MAO-B, as well as the effects of MAO on behavior (low levels of MAO are associated with criminal behavior as well as with a polygamous lifestyle). Nevertheless, the above may already give the reader an idea why it is very unlikely that with a prescription medication such as yohimbine, there wouldn't be an explicit warning if it were a MAO inhibitor.

Yohimex is one of several brands of yohimbine tablets sold in the US. Yohimex is a prescription drug with 5.4 milligram of yohimbine hydrochloride as the active ingredient, manufactured by Jones Medical Industries in Canton, OH 44702, and distributed by Kramer Laboratories in Miami FL 33174. As Yohimex is a prescription drug, it had to be reviewed by the FDA. It's hard to believe that if yohimbine were indeed a definite MAO inhibitor, a specific note on the subject matter would be missing from the brochure accompanying every bottle of Yohimex.

Alas, the package literature contains no reference claiming that yohimbine would be a MAO inhibitor. The package literature has the following to say about the clinical pharmacology of yohimbine hydrochloride:

"Yohimbine blocks presynaptic alpha-2 adrenergic receptors. Its action on peripheral blood vessels resembles that of reserpine, though it is weaker and of short duration. Yohimbine's peripheral autonomic nervous system effect is to increase parasympathetic (cholinergic) and decrease sympathetic (adrenergic) activity. It is to be noted that in male sexual performance, erection is linked to cholinergic activity and to alpha-2 adrenergic blockade which may theoretically result in increased penile inflow, decreased penile outflow or both. Yohimbine exerts a stimulating action upon the mood and may increase anxiety. Such actions have not been adequately studied or related to dosage although they appear to require higher doses of the drug".

No word on MAO inhibition. The Mosby RxList website also does not mention yohimbine as MAO inhibitor.

(Reserpine is a white to yellowish powder isolated from the roots of certain species of Rauwolfia and used as a sedative and an antihypertensive.)

Well, yohimbine and yohimbe are not exactly the same. Yohimbe is the raw tree bark, and yohimbine is just one of its active ingredients that has been extracted. Even if yohimbine is not a MAO inhibitor, it may still be the case that yohimbe is.

We have seen a number of web sites that claim that either yohimbine or yohimbe is a MAO inhibitor, or that yohimbine isn't but yohimbe is.

However, we haven't seen any conclusive study on yohimbe and MAO inhibition. If yohimbe were a strong and definite MAO inhibitor, one would have to expect fatalities if the usual precautions against tyramine-containing foods were not heeded. Any herb that functioned as a definite MAO inhibitor would long ago have been classified as a poison. But yohimbe has been sold as a supplement for years. If incidences of death would have occurred after ingesting yohimbe because of yohimbe being a MAO inhibitor, it's unlikely this fact would not be reported widely. Alas, there are no widely circulating reports of yohimbe causing deaths because of its effects as MAO inhibitor.

Sure, yohimbe and yohimbine cause side effects, which could be interpreted as an effect of MAO inhibition, mainly nervousness. But yohimbe usually does not cause an increase in blood pressure.

A safe assessment is that even if both yohimbine and yohimbe are not definite MAO inhibitors, they shouldn't be taken together with MAO inhibitors. I would add that people who are on MAO inhibition medication are anyway not physically well enough to take an additional leisure medication as strong as yohimbe or yohimbine.

Now, while yohimbe and yohimbine are not MAO inhibitors to the extent in which the term "MAO inhibitor" is pharmacologically understood, there is nevertheless some correlation between yohimbine and MAO activity.

It has been documented that yohimbine is an anxiogenic agent, a substance that can induce anxiety in humans and other higher animals. The Yohimex package literature states: “Yohimbine exerts a stimulating action upon the mood and may increase anxiety. Such actions have not been adequately studied or related to dosage although they appear to require higher doses of the drug.”

Anxiety is the missing link between yohimbine / yohimbe and MAO inhibition, and it points to a possible explanation why yohimbine / yohimbe act as aphrodisiacs, apart from facilitating erections.

In 1996, a study on the effects of some anxiogenic agents on brain monoamine oxidase inhibitory activity was conducted at the Department of Pharmacology, Banaras Hindu University, Varanasi, India (Bhattacharya SK; Chakrabarti A; Sandler M; Glover V). The study was done on rats, not on humans, as it involved dosages of yohimbine far too high to be used for sexual stimulation. The study came to the conclusion that in a state of anxiety induced by a sufficiently high dosage of yohimbine, there has been a noticeable increase of MAO-inhibitory activity without specific MAO-inhibitory pharmaceutical agents having been added.

This is of course not surprising as in any stress situation, there will likely be increased epinephrine (adrenaline) activity in any higher animal. Epinephrine activity in the body is regulated twofold: as secretion and as deactivation through chairman MAO. Additional secretion and inhibition of deamination by chairman MAO have comparative effects: an increased epinephrine level, with the typical stress-related symptoms.

A reasonable hypothesis regarding the aphrodisiac properties of yohimbe and yohimbine would probably have to consider the effect of the bark and its active ingredient on the neurotransmitter dopamine. While the usual aim of any treatment with MAO inhibitors is to raise levels of dopamine to control Parkinson’s disease, it has been noted that raised dopamine levels normally also bring about sexual agitation.

The link between dopamine and sexual urge is so strong that scientific studies have been undertaken to check to what extent measurable dopamine levels correlate to sexual perversion (paraphilic disorder).

A 1995 research on “Dopamine and sexual behavior” at the Bernard B. Brodie Department of Neuroscience, University of Cagliari, Italy, came to the following result: “Despite some differences, most studies show that treatments that increase or decrease, respectively, brain dopaminergic activity improve or worsen, respectively, several parameters of copulatory activity, supporting a facilitatory role of dopamine in male sexual behavior.”

And a 1997 study at the Harvard Medical School in Boston on “A monoamine hypothesis for the pathophysiology of paraphilic disorders” drew the following conclusion:

“A monoamine pathophysiological hypothesis for paraphilias in males is based on the following data: (i) the monoamines norepinephrine, dopamine, and serotonin are involved in the appetitive dimension of male sexual behavior in laboratory animals; (ii) data gathered from studying the side effect profiles of antidepressant psychostimulant, and neuroleptic drugs in humans suggest that alteration of central monoamine neurotransmission can have substantial effects on human sexual functioning, including sexual appetite; (iii) monoamine neurotransmitters appear to modulate dimensions of human and animal psychopathology including impulsivity, anxiety, depression, compulsivity, and pro/antisocial behavior, dimensions disturbed in many paraphiliacs; (iv) pharmacological agents that ameliorate psychiatric disorders characterized by the aforementioned characteristics, especially central serotonin enhancing drugs, can ameliorate paraphilic sexual arousal and behavior.”

The study refers to the well-known fact that many medications for Parkinson’s disease, which all aim to increase levels of dopamine, have an increased sexual appetite as a common side effect.

Many, but not all Parkinson's medications are MAO inhibitors. If scientific studies were to be undertaken on any aphrodisiac effect of yohimbine or yohimbe (apart from their well-documented effect of making better erections), they would have to check on what effect yohimbine and yohimbe have on dopamine levels, either through MAO modulation or via any alternative pathway.

MAO inhibitors, generic names and brand names:
benmoxin – Nerusil, Neuralex
echinopsidine iodide – Adepren
etryptamine – Monase
iproclozide – Sinderesin, Sursum
iproniazid – Iprozid, Ipronid, Marsilid, Rivivol, Propilniazida
isocarboxazid – Enerzer, Marplan, Marplon
mebanazine – Actamol
metfendrazine – H.M.-11
moclobamide – Aurorix, Manerix (reversible inhibitor)
nialamide – Espril, Isalazina, Mygal, Niamid, Niaquitil, Nuredal, Psicomidina, Surgex
pargyline – Eudatine, Eutonyl, Tenalin
phenelzine – Nardil, Stinerval, Monofen, Fenelzin, Kalgan, Nardelzine
pheniprazine – Catron, Catroniazide, Cavodil, Fenizin
phenoxypropazine – Drazine
pivhydrazine – Neomarsilid, Tersavid
safrazine – Safra
selegiline, l-deprenyl – Eldeprine, Eldepryl, Jumex, Jumexal, Lesotal, Movergan (selective MAO-B inhibitor)
toloxatone – Hymoryl, Perenum (selective MAO-A inhibitor)
tranylcypromine – Parnate, Sicoton, Transamin, Transapin, Tylciprine