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| General |
| Cerebral stimulants | **Medullary stimulants** | **Spinal cord stimulants** |
| Ginseng | **Khat** | **Cocaine** | **methylene-dioxy-methamphetamine****MDMA Ecstasy**  | **Amphetamined-amphetamine;methamphetamine** | **Nicotine** | **Caffeine** | **Doxapram: high therapeutic index of about 25.Nikethimidelow therapeutic index** | **Strychnine** |
| This is found in roots of 2 plants of the sameGenus (Oriental and Siberian Ginseng) .Most available products are of Oriental type | This plant herb is found in Middle East( e.g Yemen, Iran ) and in East Africa | Coca plant in South America |  |  |  |  |  | nux vomica |
|  |  | a topical local anaesthetic for skinblocks noradrenaline re-uptake by noradrenergic nerve endingsit also blocks dopamine re-uptake | enhances serotonin neurotransmission in CNS |  |  | blocking adenosine receptors ; it also inhibits intracellular phosphodiesterase which leads to increase in intracellular cAMP . | enhances stimulation of respiratory center by carotid body chemoreceptors that are stimulated by high PaCO2 and acidosis in these patients . | It antagonizes the inhibitory effect of glycine (released by Renshaw cells) on motoneurons in spinal cord |
| It contains ginsenosides that are CNS stimulantscausing insomnia with increased activity and performance | . It contains amphetamine-like alkaloids esp. cathinine which possess CNSstimulant and indirect sympatho-mimetic effectsAfter chewing esp. of fresh plant that contains moreof the alkaloids, person becomes euphoric, talkative,hyperactive , and sometimes excitement occurs. | It is powerful CNS stimulant causing marked euphoria, but excitement and convulsions occur with large doses. | This enhances inter-personal communication and causes hallucinationsin addition to CNS stimulant action . However, its chronic use is associated with depletion of neurons in serotonergic tracts of brain . | causes euphoria , increase in mentaland physical activity, insomnia, and delayed fatigueEffect last for 3-4 hours . | alertness, euphoria, as well as decreased irritability , associated with muscle relaxation.Tachycardia and increase in blood pressure occur | It increases mental activity, enhances mood and thinking, delays sleep and fatigue, increases arousal, and also improves physical performance .The respiratory center and vasomotor center in medulla are also stimulated.increases gastric acid secretion.It dilates blood vessels (except cerebral vessels),but central stimulation of vasomotor center tends to constrict vessels ; thus the extent of rise in blood pressure is variable ,depending on dose .The heart is stimulated, leading to tachycardia and, sometimes, extrasystoles occur.It also causes diuresis due to increase in renal blood flow and decrease in sodium reabsorption. | respiration in patients with respiratory failure due to acute chest infection complicating chronic bronchitis and emphysema; it also keeps these patient conscious enough to cough up infected secretions | 1-used as tonic to enhance appetite2-was used as rat poison & to kill stray dogs3-It causes symmetrical tonic convulsions with spasmof limbs in hyperextension associated with hyperreflexia. Spasm of back muscles occurs causing opisthotonus |
|  |  | Acute overdose occurs , esp. with IV use , causing psychotic behaviour, convulsions, hypertension with increased risk of stroke or myocardial infarction, and arrhythmias . It can be fatalThis overdose is treated by : haloperidol for psychosis ; diazepam for convulsions; phentolamine for hypertension; GTN or nifedipine for coronary spasm |  |  |  |  |  | Antidote for convulsions is IV diazepam or phenobarbital |
|  | It causes marked psychological dependence but onlylittle tolerance or physical dependence . | Dependence occur easily, and chronic snorters can develop ischemic necrosis of nasal septum leading to ulceration or perforation .Psychological dependence is severe, but physical dependence or tolerance is slight. |  | Psychological dependence occur rapidly withrepeated use, but physical dependence is slight.Tolerance occurs rapidly to peripheral effects(tachycardia and increase in blood pressure) butslowly to CNS effects. | Repeated daily use is associated with psychological dependence & tolerance; physical dependence is slight. Tolerance occurs rapidly to cardiovascular effects, but later also to CNS effects. | psychological with only little physical dependence or tolerance |  |  |