

# DRUGS AFFECTING ON CENTRAL NERVOUS SYSTEM

Shubhra Pandey, Dr. Ashok Mishra, Dr. Ashutosh Mishra

**ABSTRACT-** There is wide varieties of drugs which affects on central nervous system. This article emphasized on major two drugs which have potent action on central nervous system. The names of two major drugs are benzodiazepines and barbiturates, both have immense effect on central nervous system.

**KEYWORDS –** Sedative, Hypnotic, Barbiturates, Benzodiazepines

## 1. INTRODUCTION

Drugs which act on central nervous system in targeted manner to overcome diseases related to central nervous system like behavioral activities, depression, anxiety, insomnia, epilepsy and other mental problems by depressing central nervous system to calm the patient known as central nervous system depressing drugs. The central nervous system depressants includes all drugs comes under sedative, tranquilizer, hypnotic, and anxiolytic category. Central nervous system (CNS) depressants drugs exert their effects on brain by slow down the normal activity that goes on in the brain. These drugs mainly prescribe for those people who are anxious or can't sleep. When taken as directed, they can be safe and helpful. But when people take someone else's prescription drugs or take the drugs for entertainment or pleasure, they may experience dangerous consequences

## 2. HYPNOTIC SEDATIVE

A hypnotic drug should produce drowsiness and encourage the onset and maintenance of a state of sleep. Hypnotic effects involve more pronounced depression of the central nervous system than sedation, and this can be achieved with most sedative drugs simply by increasing the dose. Hypnotics are given at night or hour of sleep (HS).

A sedative is a drug that produces a relaxing, calming effect. Sedatives are usually given during daytime hours, and although they may make the patient drowsy, they usually do not produce sleep. A sedative mainly subdues excitement and calms the subject without inducing sleep. At higher doses it may result in slurred speech, staggering gait, poor judgment, and slow, uncertain reflexes. The sedatives and hypnotics are non selective, general CNS depressants with deferring time action and dose action relationship. Most clinically effective sedative-hypnotics produce their physiologic effects by enhancing the function of GABA-mediated chloride channels via agonism at the GABA A receptor. These receptors are the primary mediators of inhibitory neurotransmission in the brain.

## 3. LONG TERM USE OF SEDATIVE HYPNOTIC

Long term consumption of these drugs decreases the cumulative amount of REM sleep known as REM interference; this can result in daytime fatigue. Discontinuation of sedative-hypnotic drugs can leads to REM rebound can occur in which the patient has an abnormally large amount of REM sleep, often leading to frequent and vivid dreams.

#### 4. ACTION OF BENZODIAZEPINS AND BARBITURATES ON CNS

Barbiturates facilitate the actions of GABA at multiple sites in the CNS, but in contrast to benzodiazepines they appear to increase the duration of the GABA-gated channel openings. At high concentrations, barbiturates may directly activate chloride channels. These effects involve a binding site or sites distinct from the benzodiazepines binding site. Barbiturates are less selective in their actions than benzodiazepines, since they also depress the actions of excitatory neurotransmitters and exert non-synaptic membrane effects in parallel with their effects on GABA neurotransmission. This multiplicity of sites of action of barbiturates may be the basis for their ability to induce full surgical anesthesia and for their more pronounced central depressant effects compared to benzodiazepines.

#### 5. POTENCY OF BARBITURATES OVER BENZODIAZEPINS

Barbiturates have more potent central nervous system depressant action than benzodiazepines but the side effects of barbiturates, restrain its frequent use. By substitution at different position of barbiturates may change its chemical structure and biological properties. The alteration in chemical structure changes its pharmacological properties that enhanced safety margin and improve targeted action of newly synthesized compounds. The modified newly synthesized compounds can be significantly used for central nervous system disorders by focusing towards its therapeutic index.

#### 6. CONCLUSION

The changes of socio-economic pattern of modern society, changing life-style, food habits, lack of physical activity, loss of patience all these factors triggers the frequency of stress and depression, insomnia and psychotropic problems leads to enhance mental disorders that cause frequent use of psychotropic drugs. These drugs acts specifically on the central nervous system (CNS) for the treatment of all kind of central nervous system disorder like change in mood swings, behaviour problems, hyperactivity of patient without causing major disturbances of autonomic nervous system or any other serious disability. Barbiturates have potent CNS depressant action, by focusing towards its non selective action and low therapeutic index, alteration in chemical structure and screening of modified compounds are necessary to determine biological properties. These are essential steps to discover newer derivatives of barbiturates with potent, selective action with improved therapeutic index. By substitution at different position of barbiturates changes is chemical structure and physiochemical properties can improve its safety margin with potent therapeutic properties.

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