FUNCTIONS OF SLEEP

Although the functions of sleep remain unknown, there is clear evidence that either total sleep deprivation or isolated REM sleep deprivation is fatal in animals. Humans cannot be ethically sleep deprived for sufficient periods of time to result in any known medical consequence, as sleep eventually supervenes regardless of the technique of sleep deprivation. Sleep deprivation experiments in humans has shown that it results in severe sleepiness, irritability and impaired performance particularly in tasks requiring sustained attention.

The changes in brain unit activity during REM sleep should provide a clue to its function. Two kinds of unit activity unique to REM sleep namely REM sleep on cells and REM off cells has been described. REM sleep-on cells of the lateral pontine reticular formation and medial medullary reticular formation have been implicated in the generation of REM sleep. REM sleep off cells in the raphe system appear to have an important role in the gating of ponto-geniculo-occipital spikes. It is believed that REM sleep by maintaining the optimal functioning of norepinephrine receptors would improve the organisms' ability to sustain attention in waking. It is well proved beyond doubt that dreaming occur during REM sleep. The dream is indeed a signal rather than noise. The dream is a structured product that reflects meaningful psychological differences and thus dreaming is essential for health. The absolute amount of REM sleep at night has been correlated with intellectual functioning.

The popular theories of the functions of sleep include:

a) Restorative Theory
b) Energy conservation
c) Adaptive theory
d) Instinctive theory
e) Theory of memory reinforcement and consolidation
f) Theory of thermoregulatory function
g) Theory of synaptic and neuronal network integrity

Out of all, the most credible theory of sleep functions is to maintain the integrity of synaptic function and neuronal network integrity (14).