



Pharmacological studies of β - carboline alkaloids present in *Peganum harmala*

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ABSTRACT:

Peganum harmala, commonly called harmal seeds, Syrian rue or sometimes esphand is a flowering plant that belongs to family Zygophyllaceae. The pharmacologically active compounds of *P. harmala* include a number of β - carboline and quinazoline alkaloids. β - Carboline belongs to the group of indole alkaloids. These β - carboline alkaloids were isolated from the seeds of *P. harmala* namely harmine, harmaline, harmalol, harmol & harmane. Harmala seeds have been used in traditional medicine as an emennagogue, analgesic, and anthelmintic, a galactagogue, and a remedy for brain or nervous problems, stomach complaints, jaundice, and lumbago. β -carbolines have recently drawn attention due to their antitumor activities. As far as their antitumor activity is concerned, they can inhibit Topoisomerase I & II, CDK, DNA synthesis & intercalate into DNA. Spectroscopic studies have shown that the affinity of the alkaloids-DNA binding is in the order of harmine> harmalol> harmaline> harmane>tryptoline. β -carbolines possess diverse biological properties due to their capability to bind to benzodiazepines or imidazoline receptors, such as cardiovascular action, hypotensive, hallucinogenic or antimicrobial actions and tremorogenesis & show a potent & selective inhibition of MAO. They work by increasing the brain levels of serotonin & other neurotransmitters through MAO inhibition, suggesting their use as potential antidepressants. Various aza- & carbocyclic β -carbolines have been synthesized that can be used for the treatment of alcohol abuse. Current studies show that it is also possible that β -carboline alkaloids might be useful in the development of new drugs to treat various diseases. For a drug binding to serum albumin is critical in the determination of their distribution & pharmacokinetic & pharmacodynamic implications. Interaction of above isolated β -carbolines & its derivatives with bovine serum will be studied via various spectroscopic techniques like UV-Vis, FT-IR, Fluorescence Spectroscopy & Circular Dichroism Spectroscopy.