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Safety and Toxicity Evaluations of Xanthium strumarium Linn.

Srishti Singh, & Bhanu P. S. Sagar*

IEC College of Engineering & Technology, India

Abstract

Xanthium strumarium L. is poisonous to mammals due its toxic principle which is a diterpenoid glycoside i.e. atractyloside found in the roots and seeds. It was thought worthwhile to carry out the hepatotoxic assessments and safety and toxicity evaluations of oral administration of atractyloside and methanolic extracts of *X.strumarium* L. in albino wistar rats. So, present investigation was undertaken with following objectives:

• To develop standardized protocols for Extraction, isolation, purification, chemical characterization and quantitative estimation of Atractyloside in Seeds / Roots.

• Hepatotoxic assessments of oral administration of atractyloside in albino wistar rats.

• To study the safety and toxicity evaluation of methanolic extract in albino wistar rats.

Xanthium strumarium Linn. roots and seeds was found to contain alkaloids, Free Amino acids, Anthraquinones, Reducing sugars, flavonoids, atractyloside, Phenolics, Steroids, Terpenoids, Resin, and Saponins. In the present investigation attempt was made to separate the atractyloside from seed and roots of the plant by using instant preparative thin layer chromatography (IPTLC) technique. The Purified atractyloside was chemically characterized by IR, Mass and NMR (Proton and Carbon NMR) spectral analysis. Atractyloside concentration was found to be 2.9 and 4.3 mg/ml in plant roots and seeds respectively using HPLC techniques.

During hepatotoxic assessment, atractyloside produced severe hepatotoxicity in albino wistar rats. Observations of the sub-acute and acute toxicity studies had clearly indicated that methanolic extract of *X. strumarium* had shown a narrow safety margin in animals. So, present investigation had indicated that atractyloside induces hepatotoxicity in rats. On the basis of subacute and acute toxicity evaluation studies, it was established that both atractyloside and methanolic extract of *X. strumarium* L. possess a narrow safety margin in experimental animals used in *in-vivo* experimental and preclinical pharmacological studies.

Biography:

Bhanu P. S. Sagar had completed his PhD from Jamia Hamdard, Post-doc from National Institute of Immunology and DSc in Alternative Medicine. He is presently the Director of Pharmacy College at IEC-GI & Former Vice-Chancellor of IEC University and has published 47 papers and presented 30 papers. He has presented two papers in "AAPS 2006 National Biotechnology Conference" in Boston, USA. He is evaluator for various international journals and also selected for "Marquis Who's who in Asia" and "Marquis Who's Who in World". He has received many awards and prime areas of research include Plant Tissue Culture, Phytochemical & Pharmacological investigations of natural products.

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