



RESEARCH ARTICLE

# HEPATOPROTECTIVE EFFECT OF SAGE (*SALVIA OFFICINALIS* L.) LEAVES HYDRO-METHANOLIC EXTRACT AGAINST *ASPERGILLUS PARASITICUS* AFLATOXIN-INDUCED LIVER DAMAGE IN MALE RATS

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**Different parts of the *Salvia officinalis* L. are used to treat liver disorders, traditionally. The aim of the study is to evaluate the protective effect of *Salvia officinalis* against *Aspergillus parasiticus* aflatoxin induced hepatotoxicity in rats. Various biochemical parameters like serum alanine amino transferase (ALT), aspartate amino transferase (AST), alkaline phosphatase (AP) and total protein (TP) levels were determined. The treatment of aflatoxin at dose 450 µg/kg increased serum ALT, AST and AP levels, while decreased total protein levels in contaminated rats in comparison to control normal rats. Treatment of sage extract at doses 25, 50, 100 and 150 mg/kg body weight decreased the raised serum AST, ALT and AP levels and increased serum total protein level in treated rats in comparison to control rats. This study demonstrated the hepatoprotective activity of *Salvia officinalis* and thus scientifically supports the usage of this plant for treatment of liver disorders.**

**Key words:** Aflatoxin, *Aspergillus parasiticus*, Sage, *Salvia officinalis*, Hepatotoxicity, Hepatic enzymes.

## INTRODUCTION

Liver is the organ for metabolism and detoxification of various components entering into the body. It is involved in wide range of functions and hence it is exposed to toxic substances and drugs absorbed from the intestine.

Aflatoxins are a group of closely related compounds with small differences in chemical composition (Cullen and Newberne, 1993). Aflatoxins were first isolated about 40 years ago after outbreaks of disease and death in turkeys (Blount, 1961) and of cancer in rainbow trout (Rucker *et al* 2002) fed on rations formulated

from peanut and cottonseed meals. The toxins are produced as secondary metabolites by *Aspergillus flavus* and *Aspergillus parasiticus* fungi. The fungi responsible are ubiquitous and can affect many of the developing-country dietary staples of rice, corn, cassava, nuts, peanuts, chillies, and spices (Rucker *et al* 2002). Aflatoxicosis is the poisoning that results from ingesting aflatoxins. Two forms of aflatoxicosis have been identified: the first is acute severe intoxication, which results in direct liver damage and subsequent illness or death, and the second is chronic subsymptomatic exposure. The symptoms of severe aflatoxicosis include