SCOPE OF THE PRESENT INVESTIGATION

Liver is a vital organ of the human body and performs essential functions including detoxification and maintenance of normal immunity by generating protective antibodies. Liver is susceptible to be encountered with abnormal metabolites and toxins which are of endogenous and exogenous in origin. Environmental pollution, drugs, chronic alcohol consumption pathogens and hereditary factors can be accounted for liver susceptibility to various diseases and which results in functional deficiency.

Generally many liver protecting agents are consumed by people either to prevent or to cure liver associated disorders. Many allopathic medicines are being used to save those patients by relieving them from the hazardous symptoms. But the contraindication and limitations for their use also keep increasing due to age and sex related side effects.

From the time of its invention many medicinal plants have been traditionally practised to cure liver diseases or to strengthen the vitality of the organ. Many plants such as *Silybum marianum* (milk thistle), *Picrorhiza kurroa* (kutkin), *Curcuma longa* (turmeric), *Camellia sinensis* (green tea) and *Glycyrrhiza glabra* (licorice) have been clinically proved and patented.

India is one of the holistic countries, which believes in traditional system of folklore medicines made up of medicinal plants. Both single plant and formulation consisting of more than one plant are used in ayurvedhic system of medicine. Though many medicinal plants are widely used for liver
complaints the ever increasing problem of pollution and alcohol consumption and their by liver toxicity demands the screening and identification of new plants which can be superior to allopathic medicines due to their less toxic and cost effective nature.

*Melia azedarach*, a member of the family *Meliaceae* commonly called as “Malai vembu” is widely grown as an ornamental tree, being used against intestinal worms in skin diseases, stomach ache, intestinal disorders, uterine illnesses, cystitis, diuretic, and febrifuge. It has antiviral, antimalarial, anthelmintic, and cytotoxic activities and is also used for the treatment of hepatitis and cirrhosis.

*Piper longum* an important medicinal plant belonging to the family of Piperaceae is known as “Thippali ” being used in traditional medicine by many people in Asia and Pacific islands especially in Indian medicine. *Piper longum* is a component of medicines reported as good remedy for treating gonorrhea, menstrual pain, tuberculosis, sleeping problems, respiratory tract infections, chronic gut related pain, and arthritic conditions.

Both *M. azedarach* and *P. longum* have immense therapeutic properties especially for the treatment of liver related disorders. But the practice is only at the traditional level because of the lack of experimental proof to standardise the optimum dosage, efficacy and toxic effects.

The aim of the present study is to provide experimental proof for the hepatoprotective efficacy of the ethanolic extracts of *M. azedarach* and *P. longum* and the combined biherbal formulation made up of equal
concentrations of *M. azedarach* and *P. longum*. Generally polyherbal formulations are considered more effective than the single drug and hence the biherbal formulation has been used in the study and compared with the individual plants *M. azedarach* and *P. longum*.

The study has been divided into two parts. In one part of the study the plants have been processed and screened for the phytochemicals and tested for free radical scavenging activities by using standard models *in vitro*.

The second part of the study comprises of the evaluation of non toxic dosage by acute and chronic toxicity on albino Wistar strain rat models according to the guidelines of OECD.

After assessing the dosage by acute and chronic toxicity studies efficacy of the single and the biherbal drugs have been ascertained by using CCl<sub>4</sub> induced hepatotoxicity model in rats. The hepatoprotective nature of the drugs have been assessed by various biochemical estimations and histological observations. Rats treated with standard drug silymarin have also been utilised in this study to compare the hepatoprotective efficacy of the test drugs.

The results of this study will throw more light on the mechanism of action of the test drugs, which is hidden so far due to the lack of experimental proof. It is sure that the outcome of this study will result in the identification of a new biherbal formulation, which can be used to treat liver disorders.
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