Project Profile

Title of the Project	:	**Some phytochemical, toxicological, pharmacological investigations of *Aegle marmelos* for a new product**
Principle Investigator	:	Dr. S. Murugesan
Co Investigators	:	Dr. N. Senthilkumar
Duration of Project	:	3 years (2008-2012)
Objectives 1. Standardization of the extracts and identification of the active constituents. 2. Further pharmacological studies to substantiate the preliminary studies. 3. Toxicity studies including acute and sub acute toxicity studies. 4. Pre formulation studies and development into a pharma product.		
Funding agency	:	ICFRE
Summary/Achievements	:	Medicinal and aromatic plants have long been the subject of human requirements. It is estimated that these are about 2, 500,000 species of higher plants, and the majority of these have not been examined in detail for their biological action. One among them is Aegle marmelos Corr. (Rutaceae), known as vilvam in Tamil, bael in Hindi, sripal or bilwa in Sanskrit and bael tree in English. The investigation on some phytochemical, toxicological, pharmacological profiles of A. marmelos for a new molecule, and detailed methodologies, results have been discussed in the present study. Successive extraction & fractionation of A. marmelos leaves, ripened and unripened fruits were standardized and conducted preliminary pharmacological studies. All the three tissues were subjected to in vitro antioxidant assays namely superoxide, reducing power and nitric oxide assay. Among the three antioxidant activities super oxide scavenging activity was found to be better. Three different tissues of A.marmelos were tested against organism to study the behavioural activities in two doses of 200 and 400 mg/kg. The combined extracts were tested against experimental organism and finalized the dose for formulation. Acute toxicity studies were also conducted as per the OECD-423 guidelines (organization for economic cooperation & development). Haemtological parameters with respect to cell analysis after the treatment (ripen /unripe =100mg /100mg =200mg) and other related metabolic, histopathological parameters and toxicological effect were also measured to develop a product. Some of the compounds were identified from the ripen and unripen fruits of A. marmelos extracts are found to be effective in restoration of blood glucose and body weight to normal levels. Phytochemical studies have shown the presence of coumarins such as marmelosin, chlorogenic acid, phenols, flavonoidsetc., in A. marmelos fruits. It was reported that these compounds, especially chlorogenic acid is a polyphenol group exhibit invitro antioxidant, antidepressant actions in experimental animal. A substantiality of chlorogenic acid is present in different tissues of A.marmelos for the treatment of anxiety. It is evident from the present study that the ripen and unripen fruits induces the secretion of serotonin (neurotransmitter), which reduces immobility period of the experimental animal under Forced Swim Test (FST). The present study has generated required data on the bioactivity of these tissues against anxiety, depression, and also claimed to be useful in treating against many biological problems. Despite the plant having been widely used in India for medicinal purposes as well as various other biological uses, not many molecules extracted from the bael is existed for anxiolytic and antidepressant activity. Therefore, the identified bioactive constituents of fruits of bael would be an alternative molecule, highly effective at nontoxic doses and can be explored for product development and commercialization.