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PHYTOCHEMICAL SCREENING AND ANALGESIC ACTIVITY OF COCCINIA GRANDIS ON ALBINO RATS

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ABSTRACT

The phytochemical screening of aqueous extract of *Coccinia grandis* showed the presence of Saponins which were considered to be responsible for its pharmacological activity (Analgesic activities).Therefore *Coccinia grandis* was considered to possess analgesic activities. The investigations on *Coccinia grandis* were found to produce positive results towards the evidence of Analgesic activities. The data obtained from Analgesic activities experiments clearly suggested that the analgesic activities of *Coccinia grandis* were dose dependent.

Keywords: *Coccinia grandis,* Analgesic activities

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INTRODUCTION

Pain is an unpleasant feeling often caused by intense or damaging stimuli, such as stubbing a toe, burning a finger, putting alcohol on a cut, and bumping the "funny bone." The International Association for the Study of Pain's widely used definition states: "Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage". Pain motivates the individual to withdraw from damaging situations,to protect a damaged body part while it heals, and to avoid similar experiences in the future. Most pain resolves promptly once the painful stimulus is removed and the body has healed, but sometimes pain persists despite removal of the stimulus and apparent healing of the body; and sometimes pain arises in the absence of any detectable stimulus, damage or disease. Pain is the most common reason for physician consultation in the United States. It is a major symptom in many medical conditions, and can significantly interfere with a person's quality of life and general functioning. Psychological factors such as social support, hypnotic suggestion, excitement, or distraction can significantly modulate pain's intensity or unpleasantness. In 1968 Ronald Melzack and Kenneth Casey described pain in terms of its three dimensions: "sensory-discriminative" (sense of the intensity, location, quality and duration of the pain),

"affective-motivational" (unpleasantness and urge to escape the unpleasantness), and "cognitive-evaluative" (cognitions such as appraisal, cultural values, distraction and hypnotic suggestion).They theorized that pain intensity (the sensory discriminative dimension) and unpleasantness (the affective-motivational dimension) are not simply determined by the magnitude of the painful stimulus, but "higher" cognitive activities can influence perceived intensity and unpleasantness. Cognitive activities "may affect both sensory and affective experience "Pain can be treated not only by trying to cut down the sensory input by anesthetic block, surgical intervention and the like, but also by influencing the motivational-affective and cognitive factors as well." Plant pacifies vitiated kapha, pitta, constipation, burning sensation, leucorrhea, skin disease, fever, asthma, cough and jaundice. In Southeast Asia, ivy gourd is grown for its edible young shoots and edible fruits. In traditional medicine, fruits have been used to treat leprosy, fever, asthma, bronchitis and jaundice. The fruit possesses mast cell stabilizing, anti-anaphylactic and antihistaminic potential. Some countries in Asia like Thailand prepare traditional tonic like drinks for medicinal purposes. It is being researched for its antioxidant, anti- hypoglycemic, and immune system modulator, properties. There is some research to support that compounds in the plant inhibit the enzyme glucose-6-phosphatase. Glucose-6-phosphatase is one of the key liver enzymes involved in regulating sugar metabolism. Therefore, ivy gourd is sometimes recommended for diabetic pati. The juice of the roots and leaves is considered to be a useful treatment for diabetes. The juice of the stem is dripped into the eyes to treat cataracts. The leaves are used as a poultice in treating skin eruptions. The plant is laxative. It is used internally in the treatment of gonorrhoea. Aqueous and ethanolic extracts of the plant have shown hypoglycaemic principles. *Coccinia grandis* tender leaves and stems is used as a valuable wild vegetable by indigenous people of Southeast Asia and India. The nutritional contents including mineral elements, protein, amino acids and vitamins of the fresh tender leaves and stems, were compared with

piumgraveolens,Asparagusofficinalis,Braseniaschreberi,Glycinemax,Ipomoeaaquatica,Kali merisindica and Lactuca sativa var.lonifolia. The results demonstrated that the content of mineral elements of C.grandis is the highest in potassium (K),phosphorous (P)(except A.graveolens);iron (Fe),magnesium (Mg) (except I.aquatica),zinc(Zn) and selenium (Se). The content of vitamins in tender leaves of C.grandis is the highest in thiamine,riboflavin and niacin.Taking the egg protein as standard protein and WHO/FAO reference model of essential amino acid (EAA) as an appraisal criteri on,the protein of C.grandis was compared with those of the 7 vegetables,by means of fuzzy discrimination and the method of ratio coefficient of amino acid respectively. The results indicated that the protein content of C.grandis reaches up to 2.1% (in fresh).Its gross protein is rich in all kind of amino acid, which accounts for 93.8%.EAA take up 42% of total amino acid. The first limiting amino acid is sulfur-containing amino acid,Met and Cys. The close degree of the protein in C.grandis is 0.8070 in comparison with that of egg and its score of ratio coefficient of amino acid is 71.946.Undoubtedly the protein quality of C.grandis is far superior to that of the 7 vegetables (1-5).

Drugs are chemical compounds that modify the way the body and mind work. Most people think that these biological substances should help or heal sick people or animals. There is however no known drug that is not harmful or even poisonous at high doses, and much of the scientific work on drugs has attempted to widen the gap between effective and toxic doses. The word drug has acquired bad connotations in recent years because of the widespread abuse of few chemicals that affect the central nervous system has become a serious sociological problem. Nevertheless ,drugs act on many other organs in the body, can benefits as well as harm the nervous system, and have made possible a revolution in the way modern doctors treat disease. A curious philosophy underlines their reasoning.Diseases are evil occurrences that are counteracted by good influences; they say nature is good and therefore healing. In the last two decades, there has been a new trend in the preparation and marketing of drugs based on medicinal plants. Pharmacological effects of many plants have been studied in various laboratories in India. However there are many limitations regarding safety and efficacy of these products. Knowledge about active principles of

herbal formulations is not well defined. Information on toxicity and adverse effects of these formulations are lacking. The information regarding pharmacokinetics and bioavailability are not available. Pharmaceutical products used as medicines are usually single chemical entities with specific actions at receptors, enzymes and other cellular sites. These drugs or preparations are marketed after rigorous clinical trials to support rational pharmacotherapy. A study of the process by which traditional or more plant based molecular drugs or the new breed of herbal drugs came to be used in present day medicine reveals that, in over 70% of the cases, the starting point has been some reference to the use of that plant as an indigenous cure in a folklore or traditional system of medicine of one culture or the other. Some examples are codeine, ephedrine, quinine, and emetine among the traditional molecular drug era; and garlic, ginseng, St John`s Wort of the currently popular herbal drugs. In conclusion, it is clear that herbal industry has to make great strides in India, with the cooperation between drug regulatory authorities, scientists and industry. Standardization of methods, quality control data on safety and efficacy are need for proper understanding for the use of herbal medicines.

MATERIALS AND METHODS

Collection and Authentication of Plant Material

The plant material i.ecoccinia grandis was collected in the month of feb 2016 from Wonder Herbals Pvt Ltd, Vanastalipuram, Andhra Pradesh. Around 1kg of plant was collected.

Preparation of Powder

The plant material of coccinia grandis were shade dried and then powdered with a grinder to form a coarse powder. The powder was passed through sieve no 40 and was stored in an air tight container until further use. The powder was used for the extraction process.

Preparation of Aqueous Extract

The aqueous extract of the plant was prepared using Maceration process. The coarse powder of plant (100g) was taken inn a beaker with the water quantity of 1000ml and was Macerated for 72hrs. During the Maceration occasional stirring and warming were carried out. After 72 hrs, the suspension was filtered through a fine muslin cloth. The solvent was removed by heating it and a greenish black residue was obtained.(Yield:9.14%w/w w.r.to dried plant material).

Analgesic activity (6-8)

36 Albino rats (Wistar Strain) were taken and divided into 6 groups (Table-1) i.e. 6 in each group (Head, Body, Tail, Head-Body, Body-Tail, Head-Tail). Every rat in each group was weighed and their weights were in the range of 150- 200mg and as per the weight the standard dose of Diclofenac (10mg/kg) and coccinia grandis for each Rat was calculated. Both Diclofenac and coccinia grandis were given orally. Analgesic activity was studied by using Eddy's Hot Plate. The time for paw licking was noted in different groups as given below. The temperature in Eddy's Hot Plate was maintained at 60^{o}C.

Table-1 Grouping and treatment of rats for analgesic activity

Group	Drug given
Group I	Saline (control)
Group II	Diclofenac (standard-10mg/kg)
Group III	Low dose of *Coccinia grandis* (200mg/kg)
Group IV	High dose of *Coccinia grandis* (400mg/kg)
Group V	Low dose +diclofenac
Group VI	High dose+diclofenac

RESULTS AND DISCUSSION

The phytochemical screening of aqueous extract of *coccinia grandis* showed the presence of Saponins which were considered to be responsible for its pharmacological activity.(Analgesic activities).Therefore *coccinia grandis* was considered to possess analgesic activities.

The investigations on *Coccinia grandis* were found to produce positive results towards the evidence of Analgesic activities. The data obtained from Analgesic activities experiments clearly suggested that the analgesic activities of

Coccinia grandis were dose dependent. It lso can be noted that the combination of *Coccinia grandis* and Diclofenac had a synergistic effect in curing analgesia (Fig-1 and 2).

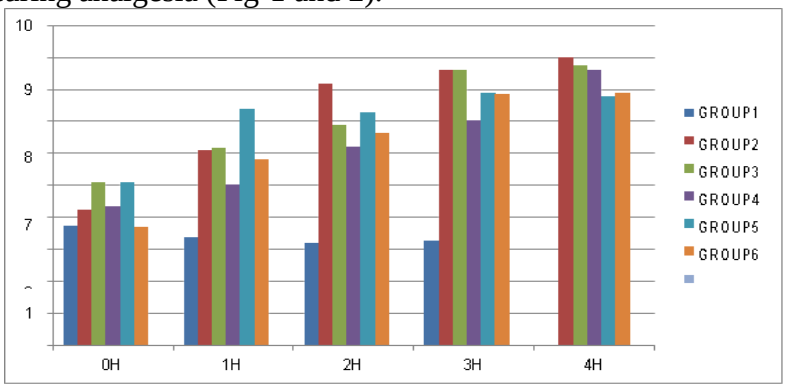

Fig-1 shows analgesics activity of treated groups against paw licking method

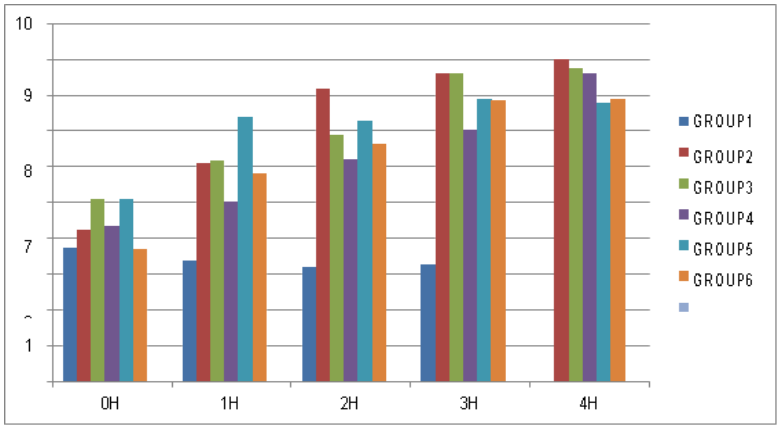

Fig-2 shows analgesics activity of treated groups against tail flicking method

CONCLUSION

The phytochemical screening of aqueous extract of *Coccinia grandis* showed the presence of Saponins which were considered to be responsible for its pharmacological activity.(Analgesic activities).Therefore *Coccinia grandis* was considered to possess analgesic activities. The literature clearly suggest that *Coccinia grandis* has been widely used as Analgesic. In order to evaluate its, Analgesic activities, *in vivo* studies of aqueous extract of *Coccinia grandis* were conducted on rats. The investigations on *coccinia grandis* were found to produce positive results towards the evidence of Analgesic activities. The data obtained from Analgesic activities experiments clearly suggested that the analgesic activities of *Coccinia grandis* were dose dependent. It lso can be noted that the combination of *Coccinia grandis* and Diclofenac had a synergistic effect in curing algesia. Finally our studies concluded that *Coccinia grandis* has Analgesic activities.

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