Phytochemical Screening And Anti- Inflammatory Activity Of Flower Extract Aerva Lanata(L.)Juss. Ex Schult

Shobana. B[1], Kaviya priya.P[2], Karthiha. N[3]
[1, 2, 3] Dept of Biochemistry
[1, 2, 3] Sri Ramakrishna College of Arts and Science for Women , Coimbatore- 44, Tamil Nadu, India.

Abstract- *Medicinal plants are the most important source of life saving drugs and have been widely used for the treatment of diseases in traditional way for several years [1]. Nature has been a vast reservoir of remedies in the form of medicinal herbs for the treatment of numerous ailments since ancient times [2]. Though there are various approaches to control diseases and their secondary complications, herbal formulations are preferred due to lesser side effects [3]. Aerva lanata (L.) Juss. ex schultbelongs to the family Amaranthaceae. Aerva lanata is a weed that is distributed widely in India, especially in warm and plane areas [4].Aerva lanata (L.) Juss.exschult(Amaranthaceae) is a woody, prostate or succulent, perennial herb or under shrub. It is traditionally known as Pashana Beda.It is also called in English as a stone breaking plant. It is commonly known as pula poo. . A variety of pharmacological activities of theplant such as anthelminthic, demulcent, anti-inflammatory, diuretic, expectorant, hepato-protective and nephron-protective [5]. Therefore the aim of the study is to investigate the phytochemicals and anti- inflammatory activity from flower of Aerva lanata.*

Keywords- medicinal plants, phytochemical, anti-inflammatory.

I. INTRODUCTION

Herbs contain many phytoconstituents that contribute to their vast array of pharmacological activities leading to the production of beneficial effects [2]. The value of plants lies in the potential access to extremely complex molecular structure that would be difficult to synthesize in the laboratory[1].

The traditional medicines system is a rich source of valuable medicinal plants but there is no scientific data to establish the activity of these plants. These plants need to be evaluated, based on their biological efficacy and chemical constituents for the drug development [6].

Several hundreds of plant genera are used medicinally as herbal preparations in the indigenous system of medicine in different countries and are sources of potent and powerful drugs [7]. Traditional knowledge of herbal drugs has been inherited from generation to generation by words of mouth and preserved with practice only[8].

Aerva lanata (L.) Juss. ex schultbelongs to the family Amaranthaceae and it is a tropical plant and growing in India, Arabia, Sri Lanka, Philippines and Java. *Aerva lanata* is a weed that is distributed widely in India, especially in warm and plane areas. *Aerva lanata* is extensively used in traditional medicinal systems to cure a variety of disorders such as helminthic infection, diabetes, inflammation, skin diseases, kidney stone, headache, cough, cholera, dysentery and diarrhea [4].

Leaves are woolly, tomentose throughout, and smaller in flowering branches. Flowers are very small, sessile, bisexual, greenish or dull white, often clustered with spikes. Seeds are kidney-shaped and shining black in colour. The root has camphor like aroma and medicinally important [5].

Aerva lanata (L.) Juss.ex schult is found throughout tropical India as a common weed in fields and wasteland. Because of its reputation in folk medicine, *Aerva lanata* has become the subject of intense pharmacological and chemical studies for the last 30 years. Various studies have demonstrated its versatile pharmacological activities [9].

II. MATERIALS AND METHOD

PHASE I

1.1 Collection of plant samples
1.2 Preparation of plant extract
1.2.1 Preparation of Ethanol extract
1.2.2 Preparation of Aqueous extract

PHASE II

2.1 Phytochemical screening
2.2 *In vitro* Anti- inflammatory activity
2.2.1 Albumin Denaturation Assay

PHASE I

1.1 COLLECTION OF PLANT SAMPLES

Healthy fresh flowers of *Aerva lanata* (L.) Juss.ex schult were collected from the nearby areas of karur district. The collected flower parts of plant sample is rinsed with distilled water and dried at room temperature for 15 days. The dried flowers were powdered and stored in air-tight container for further analysis.

1.2 PREPARATION OF PLANT EXTRACT

1.2.1 PREPARATION OF ETHANOL EXTRACT

From the powdered sample taken 30 gm of *Aerva lanata* (L.) Juss.ex schult powder was packed in filter paper and extracted in Soxhlet's apparatus using 150 ml of ethanol. The samples in the apparatus was kept boiling till the solution becomes clear and the dark coloured extract was collected at the bottom of the apparatus. The extract was stored in a container and it is used for the entire study.

1.2.2 PREPARATION OF AQUOEUS EXTRACT
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From the powdered sample taken 3gm of *Aerva lanata* (L.) Juss.ex schultpowder was addedwith 60 ml of distilled water. Then mixed it well using a glass rod and it is filtered. Then the filtrate was used for further analysis.

PHASE II

2.1 PHYTOCHEMICAL SCREENING

2.1.1 Test for Phenol

Taken 1ml of the plant extract added 20µl of 1% ferric chloride. The appearance of bluish black precipitate indicates the presence of phenol [10].

2.1.2 Test for Flavonoids

Taken 1ml of the plant extract added few drops of 1% sodium hydroxide solution. The appearance of yellow colour indicates the presence of flavonoids [10].

2.1.3 Test for Terpenoids

Taken 0.5ml of the plant extract added 2ml of chloroform and 3ml of concentrated sulphuric acid along the sides of the test tubes. The appearance of reddish brown colour at the interface indicated the presence of terpenoids[11].

2.1.4 Test for Quinones

To 1ml of the plant extract added few drops of concentrated hydrochloric acid. The presence of yellow precipitate indicated the presence of quinones [11].

2.1.5 Test for Glycosides

To 2ml of the plant extract added 1ml of glacial acetic acid. To that added 1% ferric chloride solution drop by drop and then added concentrated sulphuric acid along the sides of the test tube. The appearance of greenish blue colour indicates the presence of glycosides [12].

2.1.6 Test for Tannins

To 1ml of the extract added 10ml of distilled water. The solution was then filtered and then added few drops of 0.1% ferric chloride slowly to the filtrate. The appearance of brownish green colour indicated the presence of tannins [10].

2.1.7 Test for Saponins

To 1ml of the plant sample added 2ml of distilled water. The solution was shaken and then added three drops of coconut oil; the solution was shaken again and then observed for formation of emulsion. The formation of emulsion indicated the presence of saponins [11].

2.1.8 Test for Steroids

Taken 1ml of the plant extract added few drops of chloroform, acetic anhydride and concentrated sulphuric acid. The appearance of dark pink or red colour indicates the presence of steroids [11].

2.1.9 Test for Alkaloids

Taken 1ml of the extract added 1ml of saturated picric acid solution (Hager's solution). The appearance of yellow precipitate indicates the presence of alkaloids [11].

2.1.10 Test for Reducing sugars

Taken 1ml of the plant extract added equal volume of Benedict's reagent and allowed to stand in a water bath for 10 minutes. The appearance of brownish red precipitate indicates the presence of reducing sugars [11].

2.2*In vitro* Anti- inflammatory Activity

2.2.1 Albumin Denaturation Assay

The anti-inflammatory activity was studied by using inhibition of albumin denaturation technique which was studied according to [13] and [14] followed with minor modifications. The reaction mixture was consists of test extracts and 1% aqueous solution of bovine albumin fraction, pH of the reaction mixture was adjusted using small amount of 1N Hcl. The sample extracts were incubated at 37°C for 20 minutes and then heated to 51°C for 20 minutes, after cooling the samples the turbidity was measured at 660nm. The experiment was performed in triplicate. The percentage inhibition of protein denaturation was calculated as follows:

Percentage inhibition = (Abs Control – Abs Sample) × 100/ Abs controls

Abs control = Absorbance of the control
Abs sample = Absorbance of the test sample.

III. RESULT AND DISCUSSION

PHASE I

PHYTOCHEMICAL SCREENING

Phytochemicals are the potent bioactive components that provide the therapeutic effect in medicinal plants [15]. The phytochemical screening of ethanol and aqueous extract of *Aerva lanata* (L.) Juss.ex schultis presented in the table 1.

TABLE 1: Phytochemical Screening of ethanol and aqueous extract of *Aerva lanata* (L.) Juss.ex schult

TESTS	ETHANOL	AQUEOUS
PHENOL	-	+
FLAVANOIDS	+	-
TERPENOIDS	+	-
QUINONES	+	-
GLYCOSIDES	-	+
TANNINS	-	+
SAPONINS	+	-
STEROIDS	+	-
ALKALOIDS	+	-
REDUCING SUGAR	-	+

+ = Present,- = Absent

It is evident from the table 1 of *Aerva lanata* (L.) Juss.ex schultflower ethanol extract shows the presence of most of the phytochemicals such as flavonoids, terpenoids, quinones, saponins, steroids and alkaloids. Aqueous extract shows the presence of phenol, glycosides, tannins and reducing sugar.

***IN VITRO* ANTI- INFLAMMATORY ACTIVITY**
ALBUMIN DENATURATION ASSAY

Albumin denaturation is a process in which proteins lose their tertiary structure and secondary structure by application of external stressor compound, such as strong acid or base, a concentrated inorganic salt, an organic solvent or heat. Most biological proteins lose their biological function when denatured [16].

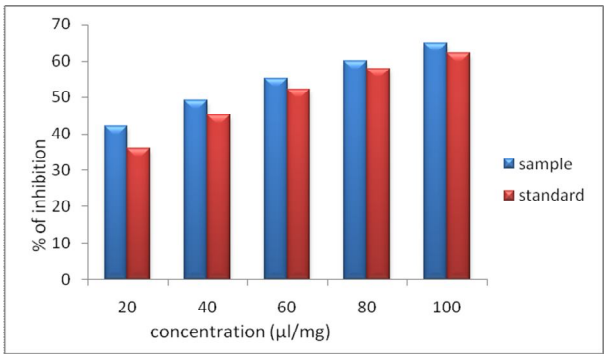

Figure 1: Albumin Denaturation Assay of ethanol extract of *Aerva lanata* (L.) Juss.ex schult

It is evident from the figure 1 shows the high anti-inflammatory activity of ethanol extract of *Aerva lanata* (L.) Juss.ex schult at 600, 800, 1000 µl/mg concentrations with 55%, 60%, 65% of inhibition when compared with the standard.

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