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Antioxidant Activity of Phytoconstituents Isolated from Leaves of Tridax procumbens

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Abstract : Tridax is Mexican, Central American and south American genus of flowering plant with its greatest concentration of Species in Mexico[1]. *Tridax procumbens* is one of the species which is widely distributed in India. Literature survey beyond doubt proved the medicinal utility of the species Tridax procumbenes. In the present study, non polar flavanoids and saponins are isolated from leaves of tridax procumbenes. Antioxidant activity of each isolated fraction was tested by spraying the TLC chromatogram of with 2,2 diphenyl-1-picryl hydrazyl (DPPH).
Key words :*Tridax procumbens*, , non polar flavanoids, saponin, antioxidant.

Introduction:

India has a rich heritage of the phytochemical analysis and herbal formulations and their curative effects on various ailments in Ayurveda. In India, Ayurvedic medicines have been using many herbs such as turmeric from ancient time . The *Charaka Samhita* describes the utility of medicinal plants in details. Phytochemical study, especially Study on antioxidants has been attracting the world wide attention. Hence it is significant to identify the plants from nature for their medicinal use. *Tridax procumbens* is a weed found widely in India. The species has been extensively documented in the literature for its variety of medicinal properties. The leaves are reported to be employed in dysentery, and diarrhoea, and for restoring hair the leaf juice possesses antiseptic, insecticidal and parasiticidal properties.

The leaf extract of *Tridax procumbens* has been used since ancient times for healing of wounds. *Tridax procumbens* is known for several potential therapeutic activity, wound healing activity is also one of them[2]. This effect of this plant reported to promote wound healing in both normal and immune-compromised(steroid treated) rats in dead space wound model. The plant increased not only lysyl oxidase but also, protin and nuclic acid contain in the granulation tissue, due to a result of increase in glycosamine glycan content[3] .Traditionally in India, the fresh juice of *Tridax procumbens* leaves have been used since a long time as remedy for dermal wounds.[4 i]

Evaluation of wound healing property of *Tridax procumbens* in wister rats has been reported[5]. The wound healing potential of tropical formulation of leaf juice of *Tridax procumbens* in mice has been reported[6].

The wound healing activity of the ointment formulation having extract of *Tridax procumbens* has been evaluated experimentally upon wound in albino rats [7]and it was found that treated wound showed the faster rate of wound contraction in albino rats.The pharmacological screening of ethanolic extract of *Tridax procumbens* had been carried out on the paremeters like wound healing activity and leucocytes count. The extract showed significant increase in wound healing activity[8]

The extract of leaves of Tridax have been reported to exhibit the decrease in glucose level in the blood in model of alloxan induced diabetis in rat[9] Evaluation of hypoglycemic and anti hyperglycemic activity of *Tridax procumbenes* (Linn) has been documented[10]. Oral administration of acute and sub chronic of *Tridax procumbens* extract showed a significant reduction in fasting blood glucose level in diabetic rat. The extact of *Tridax procumbens* has been reported to produced a significant hypoglycemic effect in rat[11]. Further studies has been reported to show the solvent fraction containing non polar substances would be among the active principle for lowering blood sugar level. Pharmacognostical and pharmacological investigation on leaves of *Tridax procumbens* has been carried out[12] Owing to these diverse biological activities it was worth experimenting to isolate different phytoconstituents from leaves of tridax procumbenes and to study their antioxidant activity.

Material and Method

The leaves of the plant tridax procumbenes were collected from local market of the hilly area nearby Melghat region of Maharashtra and identified. The reagent DPPH (2,2 diphenyl -1-picrylhydrazyl) Sigma Aldrich was used for antioxidant assay.

A. Extraction of Non Polar flavanoids[18]

10 g powered and dried leaves taken as sample-

a) The Sample was extracted with n-hexane in soxhlet apparatus. The extract was collected and evaporated.
b) The same sample was extracted with chloroform. The extract was collected and evaporated to dryness.
c) Same sample was extracted with methanol, the extract was collected and evaporated to dryness.

The residue a, b, c were dried and collected and used for antioxidant assay.

B. Extraction of saponin[18]

10 g dried leaves were added to 100 ml 20% ethanol. It was heated in water bath for 4 hours with continuous stirring at about 55^0C then it was filtered and reextracted the residue over water bath at 90^0C and transferred to 250 ml separating funnel and added 20 ml diethyl ether and shacked vigorously. Aqueous layer was recovered and 60 ml n-butanol was added and combined extract washed twice with 10ml of 5% aqueous sodium chloride evaporated in water bath up to dryness. The residue so obtained was collected and used for antioxidant study.

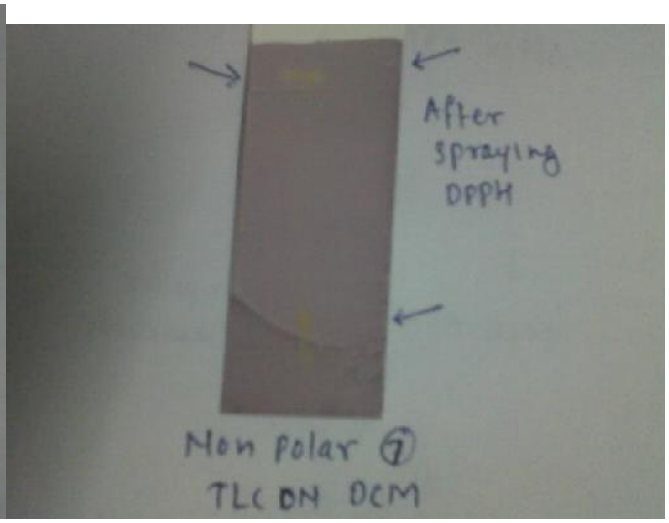
C. Extraction using solvents of different polarity

10 g powered and dried leaves were subjected to soxhlet extraction separately using solvents of different polarity as water, ethanol, dichloromethane and diethyl ether. The extracts were collected and tested for antioxidant activity using DPPH reagent. The ethanol extract showed prominent bleaching of purple color of DPPH indicating antioxidants.

Results and discussion

Antioxidant activity of non polar flavanoids : TLC chromatograph of non polar flavanoids (plates 1A, 1B, 2A and 2B) were developed using dichloromethane solvent. The TLC chromatograph was sprayed with DPPH (2, 2 diphenyl 1-picrylhydrazyl) reagent. The spots indicated by arrow bleached the purple color of DPPH indicating presence of antioxidants.

In the TLC chromatograph 1B, three spots bleached the color of DPPH and in 2B also three spots bleached the color of DPPH

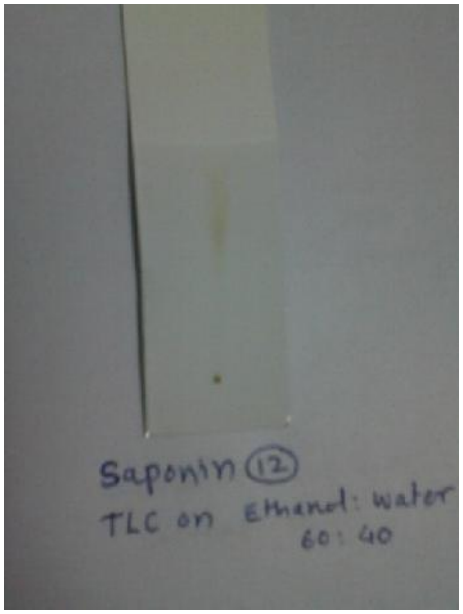


TLC on DCM plate 1A After DPPH spraying plate 1 B

TLC on DCM plate 2A After DPPH spraying plate 2 B

Antioxidant activity of Saponins

TLC chromatograph of saponins (plate 3A and 3B) was developed using ethanol : water mixture in 6:4 proportion. The TLC chromatograph was sprayed with DPPH (2, 2 diphenyl 1-picrylhydrazyl) reagent. The spot indicated by arrow bleached the purple color of DPPH up to considerable extent indicating presence of antioxidants.



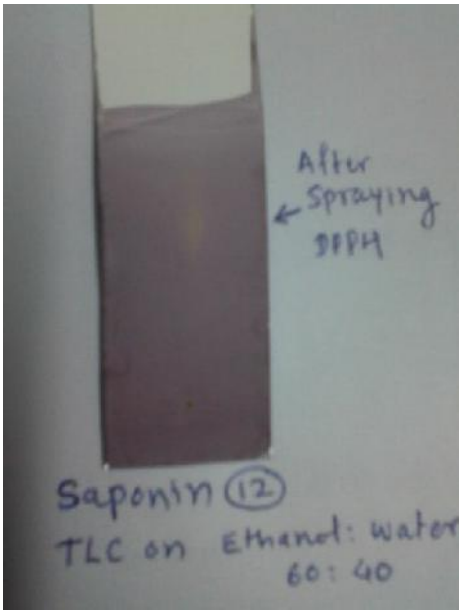


Plate 3A Plate 3B

Antioxidant activity of different solvent extracts

The four extracts viz water, ethanol dichloromethane and diethyl ether extracts were tested for antioxidant activity (plates 4A and 4B).

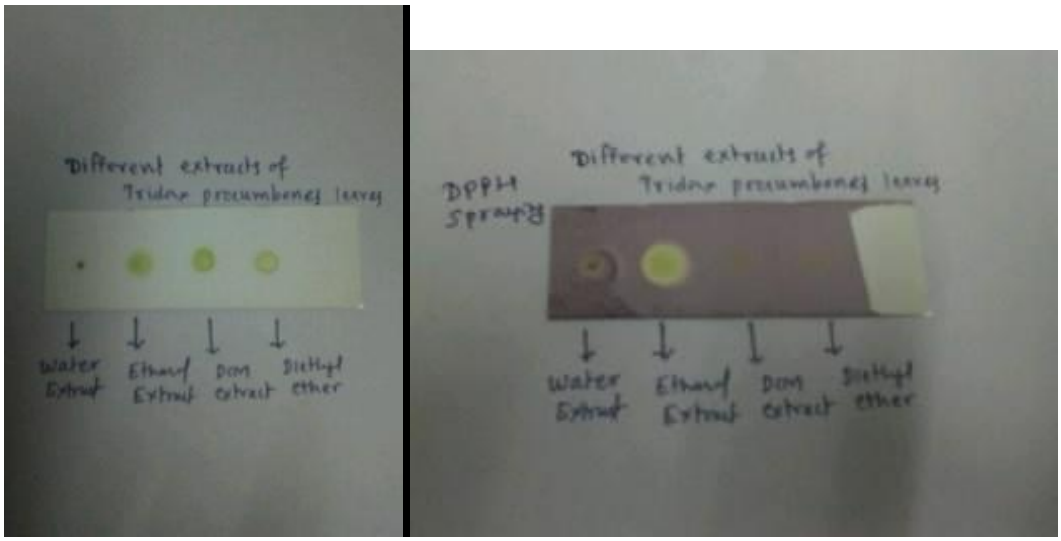


Plate 4A Plate 4B

Ethanol and water extract bleached the color of DPPH

Conclusion:

The ethanol extract of the tridax procumbenes showed highest amount of antioxidants as it bleached the color of DPPH to a maximum extent. Water extract also showed presence of antioxidants. Saponin fraction has also bleached the color of DPPH up to considerable extent which indicated the presence of antioxidants. Non polar flavanoids showed antioxidants in traces.

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