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Studies on the Chemical constituents and Antioxidant profile of *Conyza canadensis*

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Abstract: In the current research *Conyza canadensis* was explored for phytochemical and pharmacological profile. The presence of Saponins, Tannins, Flavonids, Steroids, Glycosides, Diterpenoids and Tripernoids were detected in the crude methanolic extract/fractions of *C. canadensis*. The crude methanolic extract and different solvent fractions (hexane, chloroform, ethyl acetate and butanol) were tested for determination of antioxidant activity using DPPH free radical activity. The maximum antioxidant potential at tested concentration of ethyl acetate, aqueous fraction, *n*-hexane and chloroform fraction was 70.6, 71.65, 66.50 and 38.09 % with EC_{50} value 50.35, 46.34 and 44.55 µg/ml respectively.

Key words: *Conyza canadensis* · Flavonoids · Steroids and Tripernoids · Antioxidant activity

INDRODUCTION

Medicinal plants are an important source of producing active molecules which are significance for the health of individuals and communities. The medicinal values of the plants are attributed due to the secondary metabolite that produce a definite physiological action on human body and are called phytochemicals. Free radicals are associated for several diseases including cancer, diabetes mellitus, arthritis, ageing and liver disorder. Plants constitute of various naturals products that are important form medicinal point of view [1-4]. *Conyza* belongs to family that is Asteraceae which contain round about more than fifty species, which are mainly found throughout the world. While some species of genus conyza have a lot of applications pharmacological point of view. Traditional point of view, pharmacological applications including treatment of sore smallpox and other skin related diseases, [5]. Some secondary metabolites are isolated, some of which have been reported that those metabolite have biological activity such as anti-inflammatory, [6-8]. *C. canadensis* is one of the specie belongs to family Asteraceae genus conyza. *C. canadensis* is used as antidiarrheal and as antihaemorrhoidal. Traditionally *C. sumatrensis* is used in the treatment of facial pimples and stomach disorder. Crude ethanolic extract of this plant has antimicrobial activity [10-13]. Conyza Canadensis also have antibacterial activity [14]. The objective of this study was to explore *C. sumatrensis* phytochemically and evaluate their antioxidant profile.

MATERAILS AND METHODS

Extract Preparation: The plant was collected, shad dried, pulverized and 3 kg dried powder plant materials was obtained. After plant powder maceration, crude methanolic extract was obtained according to well establish reported protocols [15-19]. After filtration and concentration under vacuum at 40°C, 300 g crude methanolic extract was obtained. The extract was further fractioned with various solvents on the basis of polarity (*n*-hexane, chloroform, ethyl acetate, *n*-butanol and aqueous fractions). The crude methanolic as well as the subsequent solvent fractions were screened for phytochemical investigation and anti-oxidant activities.

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Phytochemical Profiling: The chemical tests were performed on the crude extract and different solvent extracted fractions using standard procedure [20-23] to recognize the bioactive secondary metabolite.

Antioxidant Activity: The hydrogen atom or electron donation abilities of the corresponding extracts/fractions and standards were measured from the bleaching of the purple-colored methanol solution of 2,2-diphenyl-1-picrylhydrazyl (DPPH.) Experiments were carried out according to the standard procedure [24,25]. Briefly, a 1mM solution of DPPH radical solution in methanol was prepared and 1ml of this solution was mixed with 3ml of sample solutions in methanol (containing 20-100ug) and control (without sample).

The solation was kept in dark for 30 minutes; the absorbance was using (SP-3000 PLUS Spectrophotometer, Optima, Japan) at 517 nm. Now the decreasing DPPH solution absorbance indicates an increasing the DPPH radical-scavenging activity. Scavenging of free radicals by DPPH as percent radical scavenging activities (% RSA) was calculated as follow.

% DPPH = Control absorbance–extract absorbance X 100/control absorbance

RESULTS AND DISCUSSION

The preliminary phytochemical screening of crude extract and various solvent extracted fractions are given in table 1.

The preliminary phytochemical screening of various solvent extracted fractions of *C. canadensis* revealed the presence of bioactive secondary metabolite such as saponins, tannins, flavonids, steroids, glycosides, diterpenoids and tripernoids. The pharmacological activities are attributed due to the presence of these bioactive secondary metabolite. Different solvent extracted fractions such as *n*-hexane, chloroform, ethyl acetate, butanol and water of *C. canadensis* were screened for secondary metabolite. The polar compounds were detected in polar fractions and non-polar in non-polar solvents. Further it is clear from the data given Table 1 the number of phytochemical extracted from these plants increases as the polarity i.e. water and butanol showed the presence of maximum numbers of secondary metabolites except few while the chloroform showed only two to three classes of natural product and only steroids were find in hexane fractions.

The presence of these secondary metabolites indicated the fact that this plant may contain many pharmacological activities. The Plant crude methanolic extracts and various fractions were screened for antioxidant properties. The maximum antioxidant potential at tested concentration of ethyl acetate, aqueous fraction, *n*-hexane and chloroform fraction was 70.6, 71.65, 66.50 and 38.09 % (Table 2) with EC_{50} value 50.35, 46.34 and 44.55 µg/ml respectively (Table 3).

Table 1: Phytochemical profile of *C. canadensis*

	Crude/fractions					
Chemical constituents	Hexane	Ethyl acetate	Chloroform	Butanol	Aqueous	Crude
Alkaloids	-	-	-	-	-	-
Saponins	-	+	+	+	+	_
Tannins	-	+	+	+	+	+
Flavonids	-	+	+	+	+	+
Steroids	+	+	+	-	-	+
Glycosides	+	+	+	+	+	+
Di-turpenoids	+	+	+	+	-	+
Triterpenoid	+	+	+	+	-	+

Key words: +; present, -: absent

Table 2: DPPH radical scavenging profile of *C. canadensis*

	%DPPH				
Conc (µg/ml)	*n*-hexane	Chloroform	Ethyl acetate	Water	Crude
20	2.42	1.11	6.83	8.41	4.11
40	12.43	4.55	13.32	16.33	8.31
60	30.12	9.99	25.21	26.11	17. 51
80	40.45	20.41	31.31	40.51	25.33
100	66.50	38.09	70.6	70.66	35.00

Table 3: Antioxidant profile and EC_{50} of *C. canadensis* against DPPH radical

fraction	RSA at 100 µg/ml (%)	EC_{50} (µg/ml)
Hexane	66.50	50.35
Chloroform	37.09	-
Ethyl acetate	70.6	46.34
Methanol	35	-
Water	70.66	44.55 4.
Querceitin	98.6	12

CONCLUSION

The present investigation showed that *C. canadensis* contain phenolic compounds. The significance antioxidant properties of the plant may be correlated due to the presence of detected secondary metabolites. *C. canadensis* is important from medicinal point which should be used as a natural antioxidant and also need to study their synergistic effects, which would lead to synthesis of safe herbal drugs of global interests.

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