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Preliminary Phytochemical and Anti-Radical Profile of *Conyza sumatrensis*

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Abstract: Phytochemicals screening is important for the isolation of bioactive new and novel compounds. The current investigation is directed to the detection of bioactive chemical constituents responsible for antioxidant properties of *C*onyza *sumatrensis.* The crude methanolic extract and various solvent isolated fractions of *C. sumatrensis* showed the presence of Saponins, Tannins, Flavonids, Steroids, Glycosides, Diterpenoids and Tripernoids. The crude methanolic extract/fractions were subjected to determination of antioxidant activity by DPPH free radical activity. The ethyl acetate and aqueous fraction exhibited significance DPPH scavenging properties with EC_{50} value 50.35 and 46.34 µg/ml respectively.

Key words: *Conyza sumatrensis* · Flavonoids · Steroids · Glycosides · Antioxidant activity

INTRODUCTION

Medicinal plants are an important source of producing valuable compounds which are great importance for the health of individuals and communities. The medicinal values of the plants are 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, 2]. *Conyza* belong*s* to family Asteraceae which contain about fifty species, which are mainly distributed in subtropical and tropical regions. Some species of genus conyza have a lot of pharmacological uses traditional point of view, pharmacological applications including treatment of sore throat, smallpox, chickenpox and other skin related diseases [3], some secondary metabolites are isolated, some of which have been reported that those metabolite have biological activity such as anti-inflammatory, [4-6]. *Conyza canadensis* is one of the specie belongs to family Asteraceae genus conyza. *Conyza canadensis* is used as antidiarrhoeal and as antihaemorrhoidal & Trka, 1986; [7]. Traditionally *C*onyza *sumatrensis* is used in the treatment of facial pimples and stomach disorder. Crude ethanolic extract of this plant has antimicrobial activity [8-12].

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 [13-15]. 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.

Phytochemical Profiling: The chemical tests were performed on the crude extract and different solvent extracted fractions using standard procedure [16-18] to recognize the bioactive secondary metabolite.

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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 [19,20]. 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. sumatrensis* revealed the presence of bioactive secondary metabolite such as Saponins, Tannins, Flavonids, Steroids, Glycosides, Diterpenoids and Tripernoids. This bioactive secondary metabolite showed the medicinal value of *C. sumatrensis*. Different solvent extracted fractions such as *n*-hexane, chloroform, ethyl acetate, butanol and water of *C. sumatrensis* 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 *C. sumatrensis* crude methanolic extracts has 35 % DPPH radical scavenging properties at 100 µg/ml. While excellent activities were shown by the *n*-hexane 66.70 %, ethyl acetate 70.5 % and water fraction 71.68 %. The chloroform fraction exhibited 37.09 % DPPH radical scavenging action. The DPPH scavenging activity with an EC_{50} value for the sub-fraction of *n*-hexane, ethyl acetate and aqueous were 50.35 µg/ml, 46.34 µg/ml and 44.55 µg/ml respectively, as shown in table 2 and 3.

Table 1: Phytochemical screening of crude extract and various fractions of C. *Sumatrensis*

	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 activities of crude extract and various extracts of *Conyza sumatrensis*

	%DPPH				
Conc (µg/ml)	*n*-hexane	Chloroform	Ethyl acetate	Water	Crude
20	5.41	1.32	7.81	9..43	6.33
40	14.44	5.55	15.33	16.44	9.33
60	27.11	10.44	26.22	25.55	20.55
80	40.44	25.44	33.33	34.54	28.55
100	66.70	37.09	70.5	71.68	35.00

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

fraction	RSA at 100 µg/ml (%)	EC_{50} (µg/ml)
Hexane	66.70	50.35
Chloroform	37.09	-
Ethyl acetate	70.5	46.34
Methanol	35	-
Water	71.68	44.55
Querceitin	98.6	4.12

CONCLUSION

The present studies showed that *C. sumatrensis* contain various classes of bioactive compounds. The significance anti-radical activity of the plant may be correlated due to the presence of detected chemical constituents. *C. sumatrensis* 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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