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Phytochemical Analysis and Antioxidant Studies of *Conyza bonarensis*

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Abstract: In the present study the crude extract and its various solvent fractions of *Conyza bonarensiss* was evaluated to identify secondary metabolites and antioxidant properties. The phytochemical screening of *C. bonarensiss* exhibited the presence of saponins, tannins, flavonids, steroids, glycosides, diterpenoids and tripernoids. The crude extract and its fractions were subjected to antioxidant potential by DPPH free radical activity. The crude extract showed low to moderate antioxidant activity while its fractions exhibited significance antioxidant properties such as ethyl acetate (69.60 %), *n*-hexane (67.50 %) and aqueous fraction (70.65 %). The chloroform fraction has got limited interaction with DPPH (39.09 %). 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. The antioxidant effect of the plant is attributed to its chemical constituents.

Key words: *Conyza bonarensis* · Phytochemical screening · Anti-oxidant activities

INDRODUCTION

Medicinal plants are an significant source of producing compounds which is great importance for the health of individuals and communities. The medicinal standards of the plants are due to the compounds that produce a definite physiological action on human body and are called chemical consitutants. 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 [1-3]. *Conyza* belong*s* belong to family Asteraceae which contain more than fifty species. *Conyza* are distributed throughout the world. Genus conyza some species have a lot of pharmacological properties. Traditional point of view, pharmacological applications including treatment of sore smallpox and other skin related diseases, [4] Some secondary metabolites are isolated, some of which have been reported that those metabolite have biological activity such as anti-inflammatory [5-7], *Conyza canadensis* is one of the specie belongs to family Asteraceae genus conyza. *Conyza canadensis* is used as anti diarrhoeal and as antihaemorrhoidal and Trka, 1986 [8]. *C*onyza *sumatrensis is another species* is used in the treatment of facial pimples and stomach disorder. Crude ethanolic extract of this plant has antimicrobial activity [9-13]. Conyza Canadensis also have antibacterial activity. The current research work directed to explore chemical consitutants and antioxidant action of *Conyza bonarensiss*.

MATERAILS AND METHODS

Plant Materials: *Conyza bonarensiss* was collected (in July 2009) from Kashmir division, by Mr. Nisar Zamin. The plant was identified by Dr. Manzor. The plant materials were dried under shad and then the dried plant was pulverized and 5 kg dried powder plant material was obtained.

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Extract Preparation: These powder plant materials were subjected to maceration to get crude methanolic extract according to well establish reported protocols [14-16]. After filtration and concentration under vacuum at 40°C, 600 g crude methanolic extract was obtained. The crude methanolic extract was further fractioned with various solvents on the basis of polarity i.e. *n*-hexane, chloroform, ethyl acetate, n-butanol and aqueous fractions. The crude methanolic as well as the subsequent solvent fractions was screened for cytotoxic and insecticidal activities.

Design of Study: The present study was designed for investigation of preliminary phytochemical and antioxidant effect of natural products. For this purpose the crude extract and its various solvent fractions were subjected for these activities.

Place of Study: The experimental work was performed at the Department of Microbiology, Quid Azam University, Islamabad, Pakistan.

Phytochemical Analysis: The chemical anaylsis were performed on the crude extract and different solvent extracted fractions using standard procedure [17-20] to recognize the bioactive secondary metabolite.

Antioxidant Assay: The antiradical efficiency of extracts/fractions and standards drug 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 [22-23]. 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 10-100µg) and control (without sample).The reaction mixture 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 effect. Scavenging of free radicals by DPPH as percent radical scavenging activities (% RSA) was calculated as follow.

$$\%DPPH = Control\ absorbance - extract\ absorbance \times 100 / control\ absorbance$$

RESULTS AND DISCUSSION

The preliminary phytochemical analysis of crude extract and different isolated solvent extracted fractions are presented in Table 1. The chemical analysis of crude extracts and extracted fractions of *C. sumatrensis* indicated the presence of saponins, tannins, flavonids, steroids, glycosides, diterpenoids and tripernoids.

Table 1: Phytochemical analysis of crude extract/fractions of *C. bonarensiss*

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

Key words: +; present, -: absent

Table 2: DPPH radical scavenging activities of crude extract and various extracts of *C. bonarensiss*

	%DPPH				
Conc (µg/ml)	*n*-hexane	Chloroform	Ethyl acetate	Water	Crude
20	5.00	3.31	6.81	4.41	6.11
40	10.11	8.51	15.31	10.42	10.31
60	20.12	15.41	29.21	19.51	12.51
80	36.44	27.12	40.31	34.54	20.52
100	67.22	39.03	69.11	70.68	37.00

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

Test Fractions (crude)	EC_{50} (µg/ml)
Crude extract	-
n-hexane fraction	50.35
Chloroform fraction	-
Ethyl acetate fraction	46.34
Aqueous fraction	44.55

The identification of these chemical consitutants showed the medicinal importance of the title plant. Different solvent isolated fractions such as *n*-hexane, chloroform, ethyl acetate, butanol and water of *C. sumatrensis* were evaluated for detection of secondary metabolites. The results achieved showed that polar compounds were detected in polar fractions and non-polar in non-polar solvents extracted fractions. Further it is clear from the data given Table (1) the number of secondary metabolites detected in the title plant increases as the polarity i.e. water and butanol showed the presence of maximum numbers of chemical consitutants. The aim of this screening was identified the chemical constituents of the title plant. The presence of these compounds was indicative of the fact that this plant may contain many pharmacological activities.

The crude methanolic extracts and isolated fractions were also evaluated for antioxidant properties. *Conyza bonarensis* crude methanolic extracts has 35 % interaction with DPPH at 100 µg/ml. While excellent activities were recorded for *n*-hexane 66.50 %, ethyl acetate 70.6 % and aqueous 71.65 %. The chloroform showed limited interaction with DPPH 38.09 % at 100 µg/ml. 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 2.1 and 2.2.

CONCLUSION

The present studies directed that *C. sumatrensis* contain different classes of secoundy metabolites such as saponins, tannins, flavonids, steroids, glycosides, diterpenoids and tripernoids. The significance DPPH svavinging effect of the title plant may be due to the detected class of compounds. *C. bonarensiss* is medicinal plant which should be used as a natural antioxidant.

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