International Journal of Advanced Research and Development
ISSN: 2455-4030
Impact Factor: RJIF 5.24
www.advancedjournal.com
Volume 3; Issue 1; January 2018; Page No. 918-919

Antimicrobial activity of methanolic extract of *Dodonaea viscosa* leaves

Sanjeevkumar Giri
Department of Pharmaceutical Chemistry, Akkamahadevi Women`s University, Vijayapura, Karnataka, India

Abstract
The leaves *of Dodoneae viscose* were collected in the month of September from in and around Vijayapura and Gulbarga districts and shade dried to make a dry powder. The powdered leaves were subjected to soxhlet extraction using methanol. The leaves are rich in alkaloids, glycosides and saponins along with other phytochemicals which are in traces. The extract was screened for antimicrobial activity against the organisms *Bacillus subtilis, Escherichia coli, Klebsiella pneumonia, Aspergillus niger* and *Aspergillus flavus* following cup- plate method. The results of antimicrobial screening of methanolic extract were encouraging.

Keywords: *Dodoneae viscose*, antimicrobial, phytochemicals

Introduction
India is a country known for ancient scripts, the number system, invention of zero and Vedas. Medicines in India are used by about 60 per cent of the world's population. These are not only used for primary health care not just in rural areas in developing countries, but also in developed countries as well where modern medicines are predominantly used [1]. While the traditional medicines are derived from medicinal plants, minerals, and organic matter, the herbal drugs are prepared from medicinal plants only.

Use of plants as a source of medicine has been an ancient practice and is an important component of the health care system in India. In the Indian systems of medicine, most practitioners formulate and dispense their own recipes; hence this requires proper documentation and research. In west also the use of herbal medicines is growing with approximately 40 per cent of population reporting use of herb to treat medical diseases within the past year [2]. General Public, academic and government interest in traditional medicines is growing rapidly due to the increase side effects of the adverse drug reactions and cost factor of the modern system of medicine.

Introduction to present plant *(Dodonaea viscose)*
Scientific Classification

Kingdom	:	Plantae
Order	:	Sapindales
Family	:	Sapindaceae
Genus	:	*Dodonaea*
Species	:	*D.viscosa*

Morophology
Dodonaea viscosa, commonly called ‘sticky hop bush’, a member of the Sapindaceae family which is popularly known as aliar and Vilayati mehandi in India. It is an evergreen shrub or small tree. Dodonaeas are known as hop bush as they were used to make beer by early European Australians [3, 4].

Dodonaea viscosa has also been traditionally used by Aboriginal Australians to treat toothache, cuts and stingray stings. The reported medicinal uses of D. viscosa species by indigenous people in different parts of the world show considerable similarities [5]. In broad sense, preparations were employed largely as analgesic, anti-inflammatory, antiviral, spasmo- lytic, laxative, antimicrobial and hypotensive agents. In India, the infusion of leaves were used to treat rheumatism, gout, hemorrhoids, fractures and snake bites.

Materials and method
Leaves
Leaves alternate, simple; stipules absent; petiole very short, up to 2.5 mm long or absent; blade oblanceolate or broadly to narrowly elliptical,(1–)4–13cm× (0.5)1.5–4 cm, narrowly cuneate at base, obtuse but minutely apiculate at apex; margins entire, both surfaces glabrous but glandular and coated (especially when young) with viscid glandular exudates; midrib on both sides and 15-20(-30) often indistinct pairs of lateral veins.

Fresh leaves of selected herbs, *Dodonaea viscosa*, were collected from Gulbarga in the month of March-April, 2014 and the specimen was authenticated by several literature surveys.

The leaves were washed, cleaned and chopped into pieces and dried at 40^0 C in thermostatically controlled oven until they attained a constant weight. The samples were then crushed into powder, using mechanical grinding machine, so as to enhance effective contact of solvent with sites on the plant materials.

Extraction
The powder material was extracted with methanol for 24 hours at room temperature using soxhlet apparatus. After 24 hours excess solvent was removed by distillation under reduced pressure further the trace amount of solvent was evaporated to make the crude extract dry. The residues obtained was stored in airtight bottles in a refrigerator for further use.

Phytochemistry

Crude extract was tested for the presence of bioactive compounds by using standard chemical methods. Photochemical constituents present in *Dodonaea viscosa* leaves extract is summarized in table No-1.

Biological Activity

Antibacterial Screening

The extract was subjected for comparative antibacterial screening against a standard drug using gram negative (Escherichia coli) and a gram positive (Staphylococcus aureus) bacterial strains by cup plate method [6]. Test samples were prepared in distilled water in different concentrations viz.. 500, 1000, 1500 and 2000 μg/ml and the standard drug was used at a concentration of 100 μg/ml. The results obtained are summarized in the table No-2

Results and Discussion

The present study reveals that *D. viscosa* leaves are rich in alkaloids, glycosides and saponins. The antimicrobial activity results summarized in the table 2 indicate that the methanolic extract of *D. viscosa* leaves shows encouraging activity against both the bacterial straines used at higher concentrations.

Conclusion

Based on the present study it can be concluded that the leaf extract of D. viscosa contains active chemical constituents hence further study like isolation of individual class of compounds from this crude extract can be done and those isolated compounds shall be subjected to further biological screening.

Tables

Table 1: Results of Phytochemical test

Phytochemical Test	Inference
Phenols	+
Flavanoids	+
Steroids	-
Glycosides	+
Lignins	-
Saponins	-
Alkaloids	+

Table 2: Results of antibacterial activity.

Test Sample	Concentration (μg/ml)	Zone of inhibition (in mm)	
		E. coli	*S. aureus*
Sample-1	1000	14	15
Sample-2	500	12	13
Sample-3	250	09	11
Sample-4	175	07	09
Streptomycin	100	18	15
D. Water	--	06	06

Cup diameter= 6 mm Quantity of drug solution and control fed into each cup = 5μl

References

1. Piddock KJV, Wise R. Journal of Antimicrobial chemotherapy, 1989; 23:475-83.
2. Singh M, Chaudhry MA, Yadava JNS, Sanyal SC. J Antimicrobial Chemotherapy, 1992; 29:159-68.
3. Mulligen ME, Kauffman CA. Yu VL, American Journal of medicine, 1993; 94:313-28.
4. Lopez A, Hudson JB, Towers GHN. J Ethno pharmacology, 2001; 77:189-96.
5. Davis, J Science, 1994; 264:375-82.
6. SK Giri, H Hanumanagoud, KM Basavaraja., Indian J Heterocyclic chem. 2010; 20(2):113-116.