EVALUATION OF ANTIBACTERIAL ACTIVITY OF ANNONA SQUAMOSA LEAVES EXTRACT

Jyoti Yadav [1], Ragini Pawar [2], Manoj Mandloi [3], Ankit Panchal [4], Shivam Soni [5]

[1,3,4] Oxford International College, Indore, MP

[2] Dr.APJ Abdul Kalam University, Indore , MP

[5] Lakshmi Narain College of Pharmacy, Indore , MP

Jyoti.yadav1422@gmail.com

ABSTRACT:

From the very beginning the plants have been recognized as the most imperative source of the medicine. The different phytochemicals derived from the different parts of plant provide the potential bioactive agent for various disease treatment strategies. Microbial infections are one of the major health problems globally. Although awareness about the disease and the ways to prevent it has been increasing during the last decade, these diseases are the major causes of illness and death. Annona squamosa is a small, semi-deciduous tree, 3-7 m in height, with a broad, open crown or irregularly spreading branches; bark light brown with visible leaf scars and smoothish to slightly fissured into plates; inner bark light yellow and slightly bitter; twigs become brown with light brown dots(lenticels). The active ingredients in Annona squamosa include glycosides, alkaloids, saponins, flavonoids, tannins, carbohydrates, proteins, phenolic compounds, phytosterols and amino acids.

Key Words: *Antibacterial, Annona Squamosa, Phytochemical Screening.*

INTRODUCTION:

According to World Health Organization (WHO) medicinal plants are the best source to obtain a variety of drugs. Therefore, medicinal plants should be investigated to better understand their properties, safety and efficiency[1]. Microbial infections are one of the major health problems globally. Although awareness about the disease and the ways to prevent it has been increasing during the last decade, these diseases are the major causes of illness and death. Annona squamosa is a small, semi-deciduous tree, 3-7 m in height, with a broad, open crown or irregularly spreading branches; bark light brown with visible leaf scars and smoothish to slightly fissured into plates; inner bark light yellow and slightly bitter; twigs become brown with light brown dots(lenticels)[2]. The active ingredients in Annona squamosa include glycosides, alkaloids, saponins, flavonoids, tannins, carbohydrates, proteins, phenolic compounds, phytosterols and amino acids. The plant is found to be rich in various minerals like K, Ca, Mg, P, Cl, Na, Zn, S, Mn, Se, Ni, Cu etc[3].

MATERIALS AND METHODS

Collection and Extraction of plant material

The fresh plant part of Annona squamosa was collected from local botanical garden and market of Indore district. The entire specimen was rinsed with distilled water for the removal of traces of dust and soil present in the plant part. The dried leaves of Annona squamosa were grinded in mixer grinder and about 400 gm. of the powdered material was treated with. 95% ethanol using continuous hot percolation method[4].

ANTIBACTERIAL SCREENING

Antibacterial Sensitivity test by Disk Diffusion Susceptibility Testing (Kirby-Bauer Method)

Microorganisms used

The test organisms (Pseudomonas aureogenosa, Staphylococcus aureus, Staphylococcus epidermis, Shigella flexineri, Bacillus substilis & E.Coli)

Culture Media: The medium used for the activation of the microorganisms was nutrient broth. The nutrient agar media was used for the antibacterial test.

Concentration: Four different concentrations of *Annona squamosa* extract was prepared (100, 75, 50, and 25%). 100% = 1 g crude extract in 1 ml of freshly prepared double distilled water. Afterward, serial dilution was prepared: 75% =75 mg in 1 ml, 50% = 50 mg in 1 ml, and 25% = 25 mg in 1 ml [5,6].

RESULT AND DISCUSSION

TABLE 1: Effect of *Annona squamosa* extract on inhibition of different bacteria

S. NO	Microorganism	Concentration (Zone of inhibition in mm)			
		25% Conc.	50% Conc.	75% Conc.	100% Conc.
1.	Bacillus subtilis	15	17	19	22
2	Shigella flexineri	12	14	17	21
3.	S. epidermis	10	13	15	19
4.	S. aureus	8	10	13	15
5.	E. coli	11	13	16	19
6.	P. Aeruginosa	9	11	15	19

The above observations suggest that different concentration (25%, 50 %, 75 % & 100 %) were having good antibacterial activity against *Streptococcus aureus, Streptococcus epidermis, Psudomonas aeriginosa, Shigella flexineri, Escherichia coli* and *Bacillus subtilis*. Thus the extract is showing varying activity against the entire microorganism.

Table 2: Antibacterial activity of standard antibiotic (gram positive) against different bacteria.

Name of microorganisms	Name Standard antibiotics [zone of inhibition(mm)]			
	TE	OF	AZ	PC
S.aureus	15	16	16	14
B.subtilis	14	16	18	14
S.epidermidis	14	18	17	17

TE- Tetracycline, OF- Ofloxacin, AZ- Azithromycin & PC- Piperacillin

Table 3: Antibacterial activity of standard antibiotic (gram negative) against different bacteria.

Name of microorganisms	Name Standard antibiotics [zone of inhibition(mm)]			
	FU	GM	CX	NF
E.coli	12	16	11	16
S.flexineri	18	18	12	21
P. Aeruginosa	14	13	18	20

FU- Nitrofurantoin, GM- Gentamicin, CX- Cefotaxime & NF- Norfloxacin

CONCLUSION

Indian literatures like Ayurveda and various ancient literatures have already mentioned herbal remediation for a number of human ailments. Medicinal plants were the potent source of human health due to their active phytochemical compounds. In the present study tested the antibacterial property of Annona Squamosa plant.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interests regarding the publication of this paper.

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