ejpmr, 2018,5(9), 330-332

SJIF Impact Factor 4.897

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

COMPARISON OF ANTIMICROBIAL PROPERTY OF FICUS RACEMOSE AND MANILKARA ZAPOTA.

***P. Hardas and S. Sahasrabuddhe**

L.A.D and S.R.P. College for Women, Nagpur.

***Corresponding Author: P. Hardas**

L.A.D and S.R.P. College for Women, Nagpur.

Article Received on 05/07/2018 **Article Revised on 25/07/2018** **Article Accepted on 14/08/2018**

ABSTRACT

Medicinal plants represent a rich source of antimicrobial agents. The traditional medicine involves the use of different plant extracts of bioactive constituents.[1] The present study was undertaken with an objective to find out the antibacterial activity of *Ficus recemosa* Linn and *Manilkara zapota* leaves against microorganisms.

KEYWORDS: *Ficus recemosa*, *Manilkara zapota*, umber, chickoo, antimicrobial property, disc diffusion.

1. INTRODUCTION

Herbs are staging a comeback and herbal 'renaissance' is happening all over the globe. The herbal products today symbolise safety in contrast to the synthetics that are regarded as unsafe to human and environment. Although herbs had been priced for their medicinal, flavouring and aromatic qualities for centuries, the synthetic products of the modern age surpassed their importance, for a while. However, the blind dependence on synthetics is over and people are returning to the naturals with hope of safety and security.[2] Among ancient civilisations, India has been known to be rich repository of medicinal plants. The forest in India is the principal repository of large number of medicinal and aromatic plants, which are largely collected as raw materials for manufacture of drugs and perfumery products. Green plants synthesize and preserve a variety of biochemical products, many of which are extractable and used as chemical feed stocks or as raw material for various scientific investigations. Many secondary metabolites of plant are commercially important and find use in a number of pharmaceutical compounds.[3]

Antibacterial secondary metabolites are usually classified in three large molecule families: phenolics, terpenes and alkaloids.[4]

1.1. OBJECTIVE

Comparison of antimicrobial activity of *Ficus recemosa* Linn and *Manilkara zapota* leaves against microorganisms, (*Staphalococcus aureus, Staphylococcus epidermidis, Pseudomonas aeruginosa* and *Candida albicans)* with standard antibiotic (Tetracycline).

2. MATERIAL AND METHODS

- ***Ficus racemose***

2.1. Botanical descripition: Scientific name: Ficus racemosa.

Common name: Indian fig, Umber, Udumbara, Gular fig, Cluster fig, Country fig, Cluster Fig Tree, Goolar.

Family: Moraceae.

Chemical constituents of leaves: Tetra triterpene, tannins, glauanol acetate, racemosic acid.[5]

- **Manilkara zapota**

2.2. Botanical descripition: Scientific name: *Manilkara zapota.*

Common name: Chickoo, Sapodilla, Sapoti, Chikoo.

Family: Sapotaceae.

Chemical constituents of *Manilkara zapota*

Leaves: Leaves contain phenolic componds: D- quercitol methyl chlorogenate etc., tannins, Erythrodiol, oleic acid, linolenic acid and linoleic acid, lupeol acetate, oleanolic acid, palmitic acid, β- sterol, stigmasterol,. hydrocarbons, ascorbic acid, carbohydrates, amino acid: analine, arginine, leucine, tryrosine.[6]

2.3. Collection and authentication of herbs

The leaves of *Ficus racemose* (umber/ cluster figs) and *Manilkara zapota* (chickoo) were collected from local garden in Nagpur.

The leaves were authenticated botanically, from the Department of Botany of Rashtrasant Tukdoji Maharaj Nagpur University.

3. METHODOLOGY

3.1. Extraction of herbs

The fresh leaves of Umber and Chickoo were washed, cleaned and subjected to air dried in shade under normal

environmental conditions for 3-4 days. The leaves were charged into Soxhlet apparatus, and sequential Soxhlation of herbs was carried out on the basis of polarity of solvent, i.e; first from Water, then alcohol and later acetone. The extraction with each solvent was carried out up to 25-30 cycles. Solvent was evaporated to obtained pure extract.[7]

3.2. Phytochemical analysis of herbs

The phytochemical analysis of the herbs were carried out and are noted in table no: 1.

Table 1: Phytochemical analysis of herbs.

SR.NO	HERBS		Phytochemical tests for herbs		
			For tannins	Forphenolics componds	For terpenoids
1	Umber	Water	+	+	+
		Alcohol	+	+	+
		Acetone	-	-	-
2	Chickoo	Water	+	+	+
		Alcohol	+	+	+
		Acetone	-	-	-

+: indicates Presence -: indicates Absence.

3.3. Antimicrobial assay of *Ficus recemosa* Linn and *Manilkara zapota*

Anti microbial activity of herbal extract was examined before incorporation in the product using Disc diffusion method and zone of inhibition were noted.

3.3.1 Procurement of organism

The standard bacterial cultures used for this study were proccured from MTCC. The cultures were subcultured and grown in nutrient agar medium.

3.3.2 Microorganisms used

Pseudomonas aeruginosa, Staphylococcus epidermis, Candida albicans, Staphylococcus aureus Standard antibiotic disc (tetracycline) was used for the control. Similarly all the other bacterial cultures were introduced in the plates and test samples were introduced and mark properly. All the above procedure was carried out in a laminar flow and in aseptic chambers. Plant extracts were tested in different concentration as 0.05% and 0.1%.[8]

3.3.3 Zone of Inhibition

The zone of inhibition was observed on the next day (approx. after 24 hours), it was measured in millimeters with the help of scale. The zone of inhibition of extracts is mentioned from Table no.: 2-5.

Table 2: Comparison of Zone of inhibition for 0.05% aqueous extracts of herbs against organisms.

Zone of inhibition (mm)				
Sr. no	ORGANISMS	CONTROL	UMBER	CHICKOO
1	C. albicans	30	**14**	-
2	P. aeruginosa	30	**12**	10
3	S. epidermidis	22	**14**	-
4	S. aureus	30	**16**	6

Table 3: Comparison of Zone of inhibition for 0.1% aqueous extracts of herbs against organisms.

Zone of inhibition (mm)				
Sr. no	ORGANISMS	CONTROL	UMBER	CHICKOO
1	C. albicans	34	**16**	8
2	P. aeruginosa	26	**14**	10
3	S. epidermidis	24	**16**	12
4	S. aureus	24	**16**	10

Table 4: Comparison of Zone of inhibition for 0.05% alcoholic extracts of herbs against organisms.

Zone of inhibition (mm)				
Sr. no	ORGANISMS	CONTRO L	UMBE R	CHICKO O
1	C. albicans	30	**14**	-
2	P. aeruginosa	26	**12**	10
3	S. epidermidis	20	**14**	-
4	S. aureus	24	**10**	6

Table 5: Comparison of Zone of inhibition for 0.1% alcoholic extracts of herbs against organisms.

		Zone of inhibition (mm)		
Sr. no	**ORGANISMS**	**CONTROL**	**UMBER**	**CHICKOO**
1	C. albicans	36	**16**	-
2	P. aeruginosa	32	**16**	10
3	S. epidermidis	22	**14**	-
4	S. aureus	20	**12**	6

4. RESULT

Umber was seen effective against all the microorganisms, but the zone of inhibition was more and prominent in 0.1% aqueous concentration as well in 0.1% alcoholic concentration, i.e; 16mm. When compared with standard (Tetracycline) it was observed that with increase in concentration there was no significant difference in zone of inhibition of both aqueous and alcoholic concentration.

5. DISCUSSION AND CONCLUSION

The extracts haves also been reported to possess significant medicinal and pharmacological properties like antimicrobial, anti-oxidant and anti- cancer, etc. the antimicrobial assay was reported in- between 0.08%-1% for these herbs, therefore an intermediate concentration as 0.05% and 0.1% was selected common for these 2 herbs.

As mentioned, the antimicrobial assay was carried out of herbs Umber and Chickoo leaves against microorganisms, where Umber showed better antimicrobial action than Chickoo. Further in terms of concentration in both aqueous and alcoholic extracts of Umber there is no significant difference in both the cases.

If the concentration is still increased, then the activity may be increased. Finally, it is concluded that, Umber extract at higher concentration may give better result.

6. REFERENCE

1. Riberiro A.S., Estanqueiro M., Oliveira M.B. and Lobo J.M.S.; *Main benefits and application of plant extracts in skin care products*; www.mdpi.com/journal/cosmetics, 2015; 2: 48-65.
2. Bobbarala V.; Antibacterial activity of naturally occurring compounds from selected plants; *Antimicrobial Agents*; Published by: Janeza Tradine 9, 51000 Rijeka, Croatia, 2012; 2-4.
3. Joy P.P., Thomas S., Mathew S., Skaria B.P.; *Medicinal Plants*; Kerela University, 1998; 3.
4. Menghani E., Ojha C.K., Negi R.S., Agarwal Y. and Pareek A.; Screening of Indian Medicinal Plants and their potential as antimicrobial agents; *Global Journal of Science Frontier Research*, 2011; 2(11): 15.
5. Joseph B., Raj S.J.; Phytopharmacological properties of *Ficus racemose linn* – An Overview; *International Journal of Pharmaceutical Sciences Review and Research*, 2(3): 134-138.
6. Dr. Parle M. and Preeti; Chickoo: A Wonderful gift from Nature; *International Journal of Research in Ayurveda and Pharmacy*, 2015; 6(4): 544-550.
7. Khadse K.; *Study of Night Jasmine as an Antibacterial agent*; Department of Cosmetic technology, L.A.D. and S.R.P. College for Women, R.T.M.N.U.; Nagpur, 2007- 2008.
8. Jain.P; *Comparative study of Antimicrobial activity of different herb extract*; Department of Cosmetic technology, L.A.D. and S.R.P. College for Women, R.T.M.N.U., Nagpur, 2015-16; 19-20.