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ELEUSINE COROCANA (GAERTN) STEM FAT : A POTENTIAL ANTIMICROBIAL AGENT

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ABSTRACT

The fat isolated from the stem of *Eleusine corocana* (Gaertn) (Natural order-Gramineae) has been found to be very active against the bacteria *Bacillus anthraces*, *Bacillus subtilis*, *Escherichia coli*, *Klebsiella pneumoniae*, *Proteus vulgaris*, *Pseudomonas aeruginosa*, *Salmonella newport*, *Salmonella richmond*, *Salmonella staneley*, *Salmonella pullorwn*, *Staphylococcus aureus*, *Stroptococcus agalactiae*, and *Vibrio cholerae*, whereas it was also found to be active against *Aspergillus flavour*, *Aspergilius fumigatus*, *Aspergillus niger*, *Fusarium oxysporum*, *Microspermum gypsum*, *Penicillium digitatum*, *Penicillium notatum*, *Rhizipus stolonifera* and has good scope for use as antimicrobial agent.

Key words: *Eleusine corocana* (Gaertn), Steam fat.

INTRODUCTION

The plant *Eleusine corocana*[1], is generally known as Mandal or Mandua in Hindi, Marua in Bengali and Ragulu in Telgu. The plant is of natural order Gramineae. Its grains have been found to be tonic and cooling. The plant is reported to be astringent and useful for treating biliousness. *Eleusine corocana* (Gaertn) is cultivated through out in almost all regions of the country.

EXPERIMENTAL

Antimicrobial activity of the stem fat

The stem fat (isolated from the stem of *Elusine corocana*[2] (Gaertn) was dissolved in ethylene glycol and three solutions of varying dilutions (1 : 5, 1 : 10, 1 : 15) were

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prepared and tested against various bacteria and fungi employing Griseofulvin (1000 ppm) as control.

The antimicrobial activities were examined using filter paper disc plate process[3-6]. Bactonutrient agar alongwith Saboraud's dextrose agar was used as medium. Sterilized paper discs (10 nm diam.) of Whatman No. 1 filter paper, were thoroughly soaked in fat and also in the solution of their different dilutions and placed over the seeded agar plates. The antimicrobial activities were measured as an average of the maximum zones of inhibition around filter paper discs. All the experiment were carried out in triplicate. The observations and results are recorded in the Table 1, which showed that the stem fat possesses encouraging antibacterial and antifungal activities, as is evident from tables 1 and 2.

Table 1: Antibacterial activity of *eleusine corocana* stem fat

S. No.	Bacterial species	Diameter of zone of inhibition (mm)*				
		Pure fat	1 : 5	1 : 10	1 : 15	Control
1.	*Bacillus anthraces*	3.60	2.4	1.2	0.4	4.2
2.	*Bacillus subtilis*	3.90	2.8	1.6	0.3	4.5
3.	*Escherichia coli*	3.50	2.3	1.2	0.3	4.6
4.	*Klebsiella pneumoniae*	5.2	3.2	2.1	1.0	5.9
5.	*Proteus vulgaris*	3.70	1.8	0.7	0	4.8
6.	*Pseudomonas aeruginosa*	3.40	1.2	0.4	0	4.9
7.	*Salmonella newport*	5.8	3.6	2.4	1.2	6.4
8.	*Salmonella richmond*	3.30	1.3	0.8	0.1	4.1
9.	*Salmonella staneley*	3.20	1.1	0.4	0	4.5
10	*Salmonella pullorum*	1.8	0.7	0.2	0	3.0
11	*Staphylococcus aureus*	5.6	3.4	1.7	0.4	6.5
12	*Streptococcus agalactiae*	1.7	0.6	0.1	0	3.0
13	*Streptococcus pyogenes*	1.4	0.7	0.2	0	3.2
14	*Vibrio cholerae*	5.7	3.2	2.1	1.2	6.8

Table 2: Antifungal activity of fat from the stem of *eleusine corocana* stem fat

S. No.	Fungal species	Diameter of zone of inhibition (mm)*				
		Pure fat	1 : 5	1 : 10	1 : 15	Control
1.	*Aspergillus flavour*	8.6	7.2	5.1	4.2	9.6
2.	*Aspergilius fumigatus*	8.5	7.1	5.4	4.1	10.2
3.	*Aspergillus niger*	8.7	7.3	5.2	4.1	10.1
4.	*Batryotrichum deratinophlum*	8.2	6.9	5.0	4.6	8.7
5.	*Fusarium oxysporum*	5.6	4.5	3.4	2.5	7.0
6.	*Microspermum gypsum*	9.4	8.3	5.8	3.8	10.5
7.	*Penicillium digitatum*	4.2	3.2	2.4	1.3	6.2
8.	*Penicillium notatum*	4.0	3.0	2.1	1.2	5.4
9.	*Rhizipus stolonifera*	7.4	6.1	5.0	3.8	8.0

RESULTS AND DISCUSSION

A deep examination of experimental data of table 1 and table 2, has revealed that the stem fat was antibacterial active against *Klebsiella pneumoniae, Salmonella Newport, Staphylococcus aureus, Streptococcus pyogenes* and *Vilbrio cholerae,* was moderately active against *Bacillus anthraces, Bacillus subtilis, Escherichia Coli, Proteus vulgaris, Salmonella richmond* and *salmonella Staneley*. The stem fat was having least activity against *Salmonella pullorwn* and *streptococcus agalactiae*. The maximum activity was noticed against *Salmonella newport* and least against *Stroptococcus agalactiae*. The fat was found to have comparable activity with control.

With respect to antifungal activity of stem fat, it was noticed that the fat was considerable very active against *Microspermum gypsum, Aspergilus niger Aspergillus flavour* and *Batryotrichum Deratinophlum* the maximum activity being to wards *Microspermum gypsum*. The fat was moderately active against *Rhizipus stolonifera* and very less active against *Penicillium digitatum* and *Penicillium notatum,* The least active being towards Penicillium notatum.

As such, it is concluded that the stem fat has very good scope for being used potentially as powerful antimicrobial agent against *Klebsiella pneumoniae, Salmonella Newport, Staphylococcus aureus* and *Vilbrio cholerae, Microspermum gypsum, Aspergilus niger* and *Aspergillus flavour*.

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