

ANTIMICROBIAL PROPERTY OF *OCIMUM SANCTUM* AND
GOSSYPIUM HIRSUTUM

Mythological and religious faiths and believes are herited in our country through generations. Many recommended practices and procedures based on these ideas in our day to day life are in vogue since antiquity. One out of these many such, is that during solar or lunar eclipse no one should take any food or drink, nor all such cooked items be consumed after the eclipse as these are likely to be spoilt if retained. But at the same time people hesitate to spoil if any such things are not utilized before the eclipse. It is advocated that one could keep these things safely if a few leaves of *Ocimum sanctum* L. are spread over these cooked food or drink. To probe into the scientific reason behind this belief initial work on the antimicrobial activity of whole leaves of basil begun during the last solar eclipse in February, 1980.

Use of natural produce as fungitoxic agents have been reported by several authors (Dikshit *et. al.*, 1979; 1978; Garber & Houston, 1959; Nehrash, 1961; Sharma *et. al.*, 1978; Upadhyay *et. al.*, 1980). Antimicrobial property of cotton seed has already been reported. Here along with basil leaves, antimicrobial activity if any, of cotton leaves have been studied too.

Fungal species for the present study were collected as contaminants from air. Bacteria and yeasts were stock cultures. Experiments were done in 100 ml conical flasks containing 25 ml of Czapek Dox (CD), YPD and Nutrient broth for fungi, yeast and bacteria respectively. All the flasks were shaken in a rotary shaker and incubation temperature was 28°, 30°C and 37°C for fungi, yeasts and bacteria respectively. Approximately equal sizes of the basil leaves and cotton leaves were sterilised with 0.1% mercuric chloride solution and then washed several times with sterilised distilled water. In each flask four equal sizes of leaves were suspended together with 1.0 ml of spore suspension (final concentration of spore 10^6 — 10^7 /ml). Control flasks were similarly run for each organism and viable count for fungi was made from the stock spore suspension by proper dilution. Bacteria and yeasts were measured by Klett Sommerson Colorimeter at 660 nm. After 48 hours of shaking 1.0 ml of the flask content was taken out from the fungal culture and plating was done in CD agar medium. Plating of control fungal cultures were not possible due to heavy mycelial growth. For yeast and bacteria a second control was run with media and leaves only. The reading for leaves and media was deducted from the reading of leaves+media+spore suspension.

The results are presented in the Table 1. It is clear from the Table that percent survival of fungi for both basil and cotton leaves was negligible. While fungi in general showed almost same degree of sensitivity, bacteria and yeasts showed variation in sensitivity as different group of micro-organisms and also among the different members in the same group. Bhargava *et al.* (1981) reported antifungal property of aqueous extracts of *Ocimum canum* against a number of storage fungi.

It is clear from the Table that bacteria in general are not very sensitive as the fungi. Only *Klebsella pneumoneae* showed 100 per cent killing. Percent

TABLE 1. Antimicrobial activity of basil and cotton leaves

Name of organism	Percent survival*	
	Ocimum sanctum	Gossypium hirsutum
<i>Aspergillus niger</i>	0.31	0.01
<i>A. flavus</i>	0.34	0.11
<i>A. parasiticus</i>	0.11	0.11
<i>A. oryzae</i>	0.02	0.02
<i>A. nidulans</i>	0.12	0.01
<i>Penicillium islandicum</i>	0.01	0.01
<i>P. chrysogenum</i>	0.01	0.02
<i>Curvularia lunata</i>	Nil	Nil
<i>Rhizopus nigricans</i>	Nil	Nil
<i>Fusarium oxysporum</i>	Nil	Nil
<i>E. coli</i>	13.84	ND
<i>Salmonella typhi</i>	21.10	ND
<i>S. typhosa</i>	2.01	ND
<i>Staphylococcus aureus</i>	0.61	ND
<i>Klebsella pneumoneae</i>	Nil	ND
<i>Vibrio cholerae</i>	46.81	ND
<i>Saccharomyces cerevisiae</i>	Nil	Nil
<i>Candida torulopsis</i>	Nil	100.00
<i>C. pseudotorulopsis</i>	100.00	100.00

*Mean of 6 plates (fungi)

*Mean of 6 readings (yeast and bacteria).

survival for *Vibrio cholerae* is remarkably high when compared with other bacterial strain. *Saccharomyces cerevisiae* is 100 per cent sensitive to both basil and cotton leaves. Cotton leaves are not antimicrobial at least in aqueous media against *Candida torulopsis* and *C. pseudotorulopsis*. But *C. torulopsis* is highly sensitive to basil leaves.

Preliminary results on the antimicrobial property of basil and cotton leaves have been presented. Work on the effect of cotton leaves on bacteria and further detailed studies are in progress.

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