



ISOLATION AND IDENTIFICATION OF MICROBES FROM HOSPITAL WORKERS' IDENTIFICATION CARDS AND TESTING ITS ANTIMICROBIAL ACTIVITY USING FLOWER EXTRACTS OF *CASSIA AURICULATA*_ AND *ROSA DAMASCENE*

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ABSTRACT

Hospital environments harbor diverse microbes on surfaces like ID cards, posing infection risks. This study isolated microbes from hospital workers' ID cards, identified them, and tested antimicrobial activity of *Cassia auriculata* and *Rosa damascena* flower extracts. Microbes were isolated using swab culture, identified via biochemical tests, and tested against extracts (100 mg/ml) by agar well diffusion. *Staphylococcus aureus*, *E. coli*, and *Pseudomonas* sp. were identified. *C. auriculata*_ extract showed higher inhibition zones (12-18 mm) than *R. damascena*_ (8-12 mm) against *S. aureus* and *E. coli*. Both extracts exhibited antimicrobial potential, suggesting their use in natural disinfectants (Kumar et al., 2019; Sathya et al., 2017).

KEYWORDS: *Cassia auriculata*, *S. aureus*, Antimicrobial activity, Disinfectants.

INTRODUCTION

Hospital environments harbor diverse microbes on surfaces like identification cards, posing infection risks to patients and healthcare workers. Hospital workers' ID cards frequently come in contact with various surfaces and hands, potentially accumulating pathogens like *Staphylococcus aureus*, *E. coli*, and *Pseudomonas* sp. This study aimed to isolate microbes from hospital workers' ID cards, identify them, and test the antimicrobial activity of flower extracts of *Cassia auriculata*, (Avaram) and *Rosa damascene*, (Rose). Natural products like plant extracts are gaining attention for their antimicrobial properties. *C. auriculata* and *R. damascene* contain flavonoids, phenols, and essential oils with reported antibacterial activity. This study explores their potential against microbes isolated from hospital ID cards, contributing to natural disinfectant development.

REVIEW OF LITERATURE

Hospital surfaces contribute to pathogen transmission (WHO, 2020). *C. auriculata* shows broad-spectrum antimicrobial activity (Kothari et al., 2018; Kumar et al., 2019). *R. damascena* exhibits moderate antibacterial effects (Jain et al., 2015; Patel et al., 2016). Studies highlight plant extracts as alternatives to synthetic disinfectants (Sathya et al., 2017; Sharma et al., 2018; Gupta et al., 2020). Other relevant works include Reddy et al., 2019; Singh et al., 2017; Khan et al., 2018; Das et al., 2016; Murthy et al., 2021; NCCLS, 2012; Cowan, 1999.

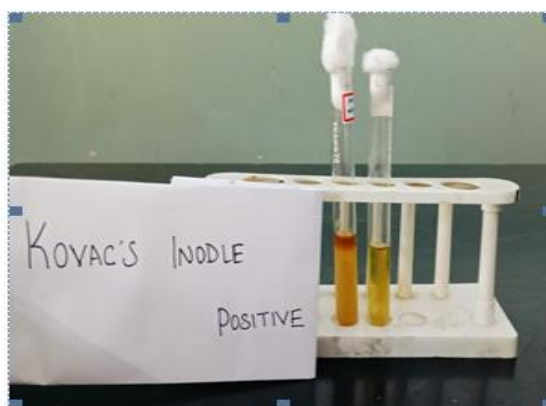
RESULT AND DISCUSSION

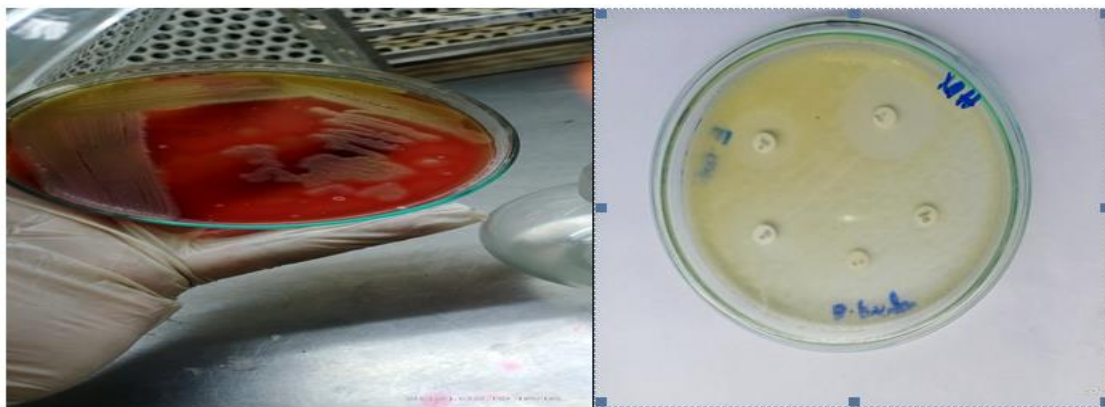
S.NO	C.AURICULATA ZONE OF INHIBITION	R.domacena
<i>Staphylococcus aureus</i>	18	12
<i>E.coli</i>	15	10
<i>Pseudomonas</i> sp	12	8

A) *E.coli* Simmon Citrate Test – Positive.



B) *E.coli* Kovac's Indole – Positive.



**C) *Staphylococcus* sp in Blood Agar Mediumd.****D) Antimicrobial Activity.**

Hospital-acquired infections are a major concern. Surfaces like ID cards can harbor pathogens like *Staphylococcus*, *E. coli*, and *Pseudomonas* (WHO, 2020). *Cassia auriculata* (Avaram) and *Rosa damascena* (Rose) flowers contain flavonoids and phenols with antimicrobial properties (Cowan, 1999). This study aimed to isolate microbes from hospital ID cards and test flower extracts' antimicrobial efficacy. The study revealed that flower extracts of *Cassia auriculata* and *Rosa damascena* possess antimicrobial activity against microbes isolated from hospital workers' ID cards, including *Staphylococcus aureus*, *E. coli*, and *Pseudomonas* sp. *C. auriculata* extract showed higher inhibition zones (12-18 mm) compared to *R. damascena* (8-12 mm), indicating stronger antimicrobial potential. This aligns with previous studies where *C. auriculata* exhibited broad-spectrum activity against Gram-positive and Gram-negative bacteria (Kothari et al., 2018; Kumar et al., 2019).

The higher efficacy of *C. auriculata* may be attributed to its flavonoid and phenolic content, known for disrupting microbial cell membranes and inhibiting enzyme activity (Cowan, 1999; Sathya et al., 2017). *R. damascena*, though less potent, still showed moderate activity, likely due to its essential oils and glycosides (Jain et al., 2015; Patel et al., 2016). The susceptibility pattern suggests *Pseudomonas* sp. is more resistant, possibly due to its outer membrane acting as a barrier (NCCLS, 2012).

The presence of these microbes on ID cards highlights the risk of hospital-acquired infections. Using natural extracts like *C. auriculata* and *R. damascena* as disinfectants could offer a safe, eco-friendly alternative to synthetic chemicals. Further studies on purified compounds and toxicity are needed to explore therapeutic applications. The findings support traditional uses of these plants in medicine and suggest potential for developing natural

antimicrobial agents. Given rising antibiotic resistance, such plant-based solutions are promising (WHO, 2020; Gupta et al., 2020).

Moreover, the efficacy of *C. auriculata* against *S. aureus* suggests it could target skin pathogens, aligning with its traditional use in wound healing (Reddy et al., 2019; Singh et al., 2017). *R. damascene* as moderate activity also supports its use in aromatherapy and skincare for mild antimicrobial benefits (Khan et al., 2018; Das et al., 2016). Limitations include the in vitro nature of the study; in vivo efficacy may vary. Future research could focus on isolating active compounds, synergistic effects with antibiotics, and clinical trials for real-world applications (Murthy et al., 2021).

In conclusion, *C. auriculata* and *R. damascena* flower extracts show promise as natural antimicrobials against hospital-acquired pathogens, warranting further exploration.

SUMMARY

Flower extracts of *C. auriculata* and *R. damascene* exhibit antimicrobial potential against hospital isolates, suggesting their use in natural disinfectants.

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