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Anti-bacterial activity of novel gel formulations prepared with seed extracts of *Coriandrum sativum* L. and *Nigella sativa* L. against *Staphylococcus aureus*

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Acne vulgaris is a chronic dermatologic condition with a complex pathogenesis which involves inflammation of pilosebaceous units (hair follicles and their accompanying sebaceous gland). It is generally characterized by the presence of *Propionibacterium acnes*, an anaerobic bacterium that mostly resides in the pilosebaceous follicles of the skin and *Staphylococcus aureus* infection, inflammation, seborrhea and follicular hyperproliferation. Spices like seeds of *Coriandrum sativum* L. and *Nigella sativa* L. are known to produce phytochemicals that exhibit antioxidant action and anti-bacterial effect and consequently may have propitious activity against inflammatory acne caused by *S. aureus*. The objective of this study was to determine the MIC (minimum inhibition concentration) and MBC (minimum bactericidal concentration) values of the face gels against *S. aureus*. Six gel bases were prepared by using carbapol 940, phenoxy ethanol, EDTA, rose water, poly ethelene glycol and triethanolamine. The seed extracts of *C. sativum* and *N. sativa* were combined into the gel bases at predetermined strengths. The MIC and MBC values were determined by broth micro-dilution and direct plate on agar methods respectively. All six face gels combined with the seed extracts of *C. sativum* and *N. sativa* exhibited very potent anti-bacterial effect against *S. aureus*. The MIC values of the face gel series were observed as 62.5-250 µg/mL and MBC values were determined as 125-500 µg/mL. The observations demonstrate that all six face gels exhibited potent anti-bacterial effect against *S. aureus* and this effect of the face gels becomes greater when the proportion of the seed extract in the formulation increases.

Keywords: *Coriandrum sativum* L., micro dilution, minimum inhibition concentration, *Nigella sativa* L., *Staphylococcus aureus*

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