

A Study on Extraction, Evaluation and Antibacterial Activity of *Trachyspermum Ammi* L.

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Abstract: Essential oil is a complex mixture of volatile compounds and can be extracted from various parts of plants. It has been used for thousands of years for medicinal and health purposes. Because of their detoxifying, antibacterial, antiviral and calming properties, it is used as a natural, safe and cost-effective therapy for a number of health concerns. Ajwain seed is very valuable for its oil contents. It is a high value medicinally important seed. It contains 53-65% Thymol as a photochemical. Thymol is reported to exhibit diverse biological activities like antibacterial, antioxidant, antiseptic, antifungal, anti-inflammatory and anticancer etc. It is also reported to show potent inhibitory activity against *E. coli* and *Staphylococcus aureus*. Resistance to antibacterial agents has become a serious problem for global health. The current study evaluated the antimicrobial activities of essential oil and respective fractions of *Trachyspermum Ammi* (L) Sprague. Seeds of the essential oil were extracted and fractionated using column chromatography. All fractions were then analyzed by gas chromatography/mass spectrometry. Antifungal and antibacterial activities of the oil and its fractions were assessed using micro dilution method. Compounds γ -terpinene (48.07%), p-cymene (33.73%), and Thymol (17.41%) were determined as major constituents. The effect of fraction II was better than total essential oil, fraction I, and standard Thymol. The greater effect of fraction II compared to standard Thymol showed the synergistic effects of the ingredients in this fraction. As this fraction and also total oil were effective on the studied microorganism, the combination of these products with current antimicrobial agents could be used.

Keywords: Medicinal and health purpose, Antibacterial Activity of *Trachyspermum Ammi* Antioxidant, Anti-inflammatory, Anticancer.

