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Potential Application of Thyme (Thymus vulgaris L.) Essential Oil as Antibacterial Drug in Aromatherapy

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Abstract : The Lamiaceae family is widely spread in Algeria. Due to the application of Thymus species growing wild in Algeria as a culinary herb and in folk medicine, the purpose of the present work was to evaluate antimicrobial activities of their essential oils and relate them with their chemical composition, for further application in food and pharmaceutical industries as natural valuable products. The extraction of the Thymus vulgaris L. essential oil (TVEO) was obtained by steam distillation. Chemical composition of the TVEO was determined by Gas Chromatography. A total of thirteen compounds were identified. Carvacrol (83.8%) was the major component, followed by cymene (8.15%) and terpinene (4.96%). Antibacterial action of the TVEO against 23 clinically isolated bacterial strains was determined by using agar disc diffusion and vapour diffusion methods at different doses. By disc diffusion method, TVEO showed potent antimicrobial activity against gram-positive bacteria more than gram-negative strains and antibiotic discs. The Diameter of Inhibition Zone (DIZ) varied from 25 to 60 mm for S. aureus, B. subtilisand E. coli. However, the results obtained by both agar diffusion and vapour diffusion methods were different. Significantly higher antibacterial effect was observed in the vapour phase at lower doses. S. aureus and B. subtilis were the most susceptible strains to the oil vapour. Therefore, smaller doses of EO in the vapour phase can be inhibitory to pathogenic bacteria. There is growing evidence that TVEO in vapour phase are effective antiseptic systems and appears worthy to be considered for practical uses in the treatment of human infections oras air decontaminants in hospital. TVEO has considerable antibacterial activity deserving further investigation for clinical applications. Also whilst the mode of action remains mainly undetermined, this experimental approach will need to continue.

Keywords : antimicrobial drugs, carvacrol, disc diffusion, Thymus vulgaris, vapour diffusion
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