



### 3. ANTIBACTERIAL ACTIVITY OF BASIL ESSENTIAL OIL

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**Introduction.** Basil essential oil has been demonstrated to possess various beneficial properties, including analgesic, anti-inflammatory, antibacterial, hepatoprotective, and immunomodulatory effects. The multifunctionality of Basil oil makes it an important candidate for incorporation into different dosage forms. The massive use of antibiotics has resulted in the emergence of resistant microorganisms, which is another problem affecting public health. *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Salmonella* spp, *Staphylococcus aureus*, *Shigella* spp., *Enterococcus* spp., *Escherichia coli* are the main bacteria that have developed this resistance. Plants and other natural resources can provide a wide range of complex and structurally different compounds.

**Aim of study.** To determine the antibacterial activity of basil oil.

**Methods and materials.** The antimicrobial activity of Basil essential oil was assessed against various indicator strains using the filter paper disc diffusion method. The in vitro testing of the samples was performed on ATCC strains from the collection of the Microbiology Laboratory of Saarland University on *Escherichia coli* (ATCC 25923) and *S. epidermidis* (ATCC 25922) strains. The strains were revived by overnight growth in Brain-Heart Infusion broth (Oxoid, CM1135) at 37°C and were diluted to an optical density of 0.5 McFarland standard ( $1.5 \times 10^8$  CFU/ml).

**Results.** The data obtained from the disc diffusion method, followed by measurement of MIC, indicate that *E. coli* and *S. epidermidis* showed lower values of MIC (1.25 mg/mL, respectively). Therefore, the Basil oil was shown to exhibit strong antimicrobial activity against all microorganisms tested, both Gram-positive and Gram-negative bacteria, even though Gram-positive strains seem to be more sensitive to it. Overall, the observed antimicrobial activity of Basil oil might be attributed to the high contents of linalool that possesses a stronger antimicrobial activity against Gram-positive bacteria than against Gram-negative bacteria.

**Conclusion.** Basil oil is a natural source that can be used in formulation of dosage forms with antibacterial activity.