Characterization and rapid bactericidal activity of *Ocimum gratissimum* leaves essential oil against selected gastroenteritis pathogens

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Abstract: Essential oil from fresh leaves of *Ocimum gratissimum* (OGEO) was water-steam distilled and analyzed by GC–MS. Among the 37 identified compounds, eugenol (55.6%) was the major component, followed by cis-ocimene (13.9%), γ-murolene (11.6%), (Z,E)-α-farnesene (5.6%), α-trans-bergamotene (4.1%), and β-caryophyllene (2.7%). Antimicrobial activity was tested against four selected gastroenteritis pathogens (*Escherichia coli*, *Shigella flexneri*, *Salmonella typhimurium*, and *Staphylococcus aureus*). OGEO exhibited antibacterial activity against the four tested pathogens and showed minimum inhibitory concentrations (MICs) and minimum bactericidal concentrations (MBCs) in the ranges of 1–2 and 2–4 mg/mL, respectively. The most susceptible (lowest MIC) bacteria was *S. flexneri* with MIC of 1 mg/mL. The ratio of MIC/MBC was between 1 and 2, revealing the bactericidal property of OGEO. The rapidness and duration of the antibacterial property of OGEO against the four tested strains were assessed using time-kill assay. OGEO also displayed rapid bactericidal effect at 4 × MICs against all selected gastroenteritis pathogens within 5 min.

Keywords: *Ocimum gratissimum*; Gastroenteritis; Rapid bactericidal activity