PHYTOCHEMICAL, ANTIOXIDANT, AND ANTIBACTERIAL ANALYSIS OF ESSENTIAL OILS FROM *Zingiber officinale Roscoe (Ginger)* AND *Curcuma long Linn. (Turmeric)*

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ABSTRACT

This study was conducted to characterize and compare the phytochemistry, antibacterial and antioxidant activities of essential oils extracted from the rhizomes of *Zingiber officinale Roscoe* (ginger) and *Curcuma longa Linn.* (turmeric). Percent yields in the steam distillation of ginger and turmeric were 0.42±0.02% and 0.43± 0.02%, respectively. Qualitative phytochemical screening showed that both essential oils are positive for flavonoids, phenols, saponins, terpenoids, tannins, and quinones. Antibacterial activity was tested against Gram-positive *Staphylococcus aureus* and Gram-negative *Escherichia coli* using 100%, 75%, 50%, and 25% (v/v) essential oil in ethanol with positive control tetracycline and negative control ethanol. It was determined that *C. longa* did not have antibacterial activity against both bacteria while *Z. officinale* had "moderately inhibitory" to "strongly inhibitory" activity against *S. aureus* with zone of inhibition (ZOI) from 17.67±1.53 mm to 23.67±0.58 mm and "weakly inhibitory" to "moderately inhibitory" activity against *E. coli* (ZOI from 12.33±1.15 mm to 15.67±2.08 mm). The standard antibiotic tetracycline also showed "moderately inhibitory" activity against both *S. aureus* (ZOI = 19.00±0.89 mm) and *E. coli* (ZOI = 17.33±1.21 mm). Antioxidant activity was determined by DPPH free radical inhibition. Highest % DPPH free radical inhibition was exhibited by the standard antioxidant ascorbic acid (92.98%), followed by *C. longa* essential oil (88.74%), and *Z. officinale* (76.30%).