

Screening of *Morus alba*, *Citrus limon* and *Trigonella foenum-graecum* extracts for antimicrobial properties and phytochemical compounds

ABSTRACT

In the present study, the effect of aqueous and methanol extracts of *Trigonella foenum-graecum* seed (fenugreek), *Citrus limon* peel (lemon) and *Morus alba* foliage (mulberry) against two Gram-negative bacteria, *Aeromonas hydrophila* and *Escherichia coli* and two Gram-positive bacteria, *Streptococcus agalactiae* and *Staphylococcus aureus* were investigated and the phytochemical compounds of the tested herbal extracts were determined. The results indicated that the aqueous extracts of *Trigonella foenum-graecum* seed and *Citrus limon* peel revealed weak antibacterial activity against the bacteria. The methanol extracts of all herbs exhibited stronger antimicrobial activities against the tested pathogens. Among the entire methanol extracts, the *Morus alba* had the strongest activities. *Aeromonas hydrophila* was the most sensitive microorganism tested. The phytochemical screening of the plants showed the presence of secondary metabolites such as phenols, volatile oils, tannins, saponins, steroids, flavonoid, terpenoids and alkaloids.

Keyword: Antimicrobial properties; Bacteria; *Citrus limon*; *Morus alba*; Phytochemical compounds; *Trigonella foenum-graecum*