

In vitro antibacterial and antifungal activities of extracts and fractions of leaves of *Ricinus communis* Linn against selected pathogens

Bedaso Kebede* and Workineh Shibeshi
Addis Ababa University, Ethiopia

Introduction: Infectious disease impacts are reduced due to the development of antimicrobial agents. However, the effectiveness of antimicrobial agents is reduced over time because of the emergence of antimicrobial resistance. To overcome these problems, scholars have been searching for alternative medicines. *Ricinus communis* is used as a traditional treatment for bovine mastitis, wound infection and other medicinal purposes.

Objective: The objective of the present study was to further evaluate the antimicrobial activities of *R. communis* leaf extracts and fractions.

Methods: *R. communis* leaves were macerated in methanol and acetone. The methanol extract showed better antimicrobial activity and subjected to further fractionation via increasing polarity of solvents (n-hexane, chloroform, ethyl acetate and aqueous). Test microorganisms included in the study were six laboratory reference bacteria (*Escherichia coli*, *Staphylococcus aureus*, *Streptococcus agalactiae*, *Kleibella pneumoniae*, *Pseudomonas aeruginosa* and *Streptococcus pyogenes*), two clinical isolate bacteria (*E. coli* and *S. aureus*), and *Candida albicans*. The agar well diffusion method was employed to determine antimicrobial activity. The Minimum Inhibitory Concentrations (MIC) and Minimum Bactericidal/Fungicidal Concentrations (MBC/MFC) were determined through broth microdilution.

Results: The results indicated that the best antimicrobial activity for ethyl acetate fraction ranged from 14.67 mm (clinical *E. coli*) to 20.33 mm (*S. aureus*) at 400 mg/ml, however, n-hexane exhibited the lowest antimicrobial activity. Among the tested fractions, ethyl acetate fraction showed the lowest MIC values ranged from 1.5625 mg/ml (*S. aureus*) to 16.67 mg/ml (*Candida albicans*). The ethyl acetate fraction showed bactericidal activity against all tested microorganisms.

Conclusion: Hence, ethyl acetate fraction of crude methanol extract exhibited the best antimicrobial activity.

Biography

Bedaso Kebede has his expertise in diagnosis and investigation of animal diseases and analysis of food safety.

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