Phytochemical screening and pharmacological activity of *Boucerosia* procumbens extracts

Mohammed Rageeb Mohammed Usman, Bharat V Jain, Sandeep R Pawar and Tanvir Y Shaikh

Smt. Sharadchandrika Suresh Patil College of Pharmacy, India

*Boucerosia indica* was investigated for preliminary phytochemical analysis and antimicrobial activity. Qualitative phytochemical screening of petroleum ether, acetone, methanol and aqueous extract of the aerial part revealed the presence of various classes of phytoconstituents such as carbohydrate, amino acids, proteins, saponin, flavonoids, steroids, phenolic compounds, tannins, terpenoids, fixed oils and fats. Bioassay of antimicrobial activity of all the extracts was tested against pathogenic bacteria like gram positive (*Bacillus subtilis*, *Staphylococcus aureus*, *Streptococcus pyogenes*, *Streptococcus faecalis*), gram negative (*Escherichia coli*, *Klebsiella pneumoniae*, *Salmonella paratyphi A*, *Salmonella typhi*) and fungal organisms like *Aspergillus flavus*, *Aspergillus niger*, and *Candida albicans*. The methanol and aqueous aerial extract showed significant antibacterial and antifungal activities respectively against the selected pathogenic microorganism when compared to the standard drug. Based on these result, the study concludes that aerial extract of *Boucerosia indica* have different phytoconstituents and possesses antimicrobial effects making it a good candidate for producing antimicrobial drugs.

rageebshaikh@gmail.com

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Novel biodegradable hydrogel sponge composite containing curcumin and honey for chronic diabetic foot ulcers

Munira M Momin

Mumbai University, India

A biodegradable superporous wound healing sponge composite of chitosan and alginate incorporated with curcumin and honey was successfully developed. The hydrogel base has good capacity to donate moisture or absorb exudates. The ancient system of Indian medicines has recommended curcumin and honey combination as an effective wound healing remedy wound healing. The proposed sponge composite contains curcumin (3%w/v) and honey (10%v/v). The morphology and chemical structure was characterised by SEM and FTIR. A 32 factorial design was adopted to optimize the formulation variables, i.e., Amount of Chitosan (X1) and Amount of Alginate (X2). The selected dependent variables, i.e., swelling capacity (Y₁) and drug diffusion rate (Y₂) showed statistically significant effect. The swelling capacity, moisture loss, folding endurance, tensile strength, water vapour permeation (41.12g/m²/h), biocompatibility, bioadhesion (20±0.2 mg force), *in-vitro* biodegradation, *in-vitro* drug diffusion and wound healing properties were studied to confirm the applicability of the developed hydrogel composite for chronic diabetic foot ulcers. The developed sponge composite delivers the drug slowly for the period of 12 days along with biodegradation. As the X1 increased, swelling capacity and strength of the composite was increased. The highest swelling capacity was 111.05±05%. This optimized batch also showed elongation 26.53 mm and tensile strength 4323 gm/mm² and maintained its integrity. The batch F9 presented slow and controlled drug diffusion (69.11%) over a period of 20 days. The wound contraction results revealed that faster healing pattern of curcumin composite sponge is due to presence of chitosan which enhances the granulation and epithelization process.

munira_momin@yahoo.com