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Extraction, isolation and formulation development of chewing gum from some herbal extracts for treatment of periodontal diseases

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Oral diseases are major health problems and periodontal diseases among the most important preventable global infectious diseases. Development of bacterial resistance to presently available antimicrobial agents and their side effects has necessitated the search for new antimicrobial agent of natural origin. The aim of the present work was to develop a chewing gum with antimicrobial activity which will cure/protect from various periodontal diseases. Screening of methanolic extracts of different plant materials for antimicrobial activity was carried out with the help of disk diffusion method against some oral pathogens. Minimum inhibitory concentration assay was performed by agar dilution method. And then bioactivity directed fractionation of methanolic extracts of plant materials and isolation of active constituents responsible for the activity were performed by column chromatography and further characterization of isolated compounds was performed by chromatographic and spectroscopic methods.

Chewing formulation was designed and developed including dried extracts of *Beautea monosperma, Cordia obliqua, cuminum cyminum* and other excipeints. Drug excipeint interaction studies, organoleptic characterization, gum's weight variation, thickness, hardness, friability, drug content uniformity tests were determined. Standardization of the formulation was performed by taking nicco gum as standard marketed formulation. Release of drugs was studied in pH 6.8 using a mastication device. Total phenolic and flavonoid contents were estimated by Folin-Ciocalteu and aluminium chloride method, and stability studies were performed (40oC and RH 75% ± 5% for 90 days).

Results were encouraging, as all other antibiotics were inactive against these strains. The present study suggests that methanolic extracts from seeds and leaves of *Cordia obliqua*, twigs and barks of *Beautea monosperma* and seeds of *Cuminum cyminum* possess significant antimicrobial activity. And isolated compounds showed activity at very low concentration (15 µg/disc, 20 µg/disc and 15 µg/disc) on oral pathogenic bacteria. Results of the evaluation of formulation were satisfactory on every parameter. Results suggest, plant extracts possess compounds with antimicrobial properties that can be used as potential antimicrobial agents and gums can be a good carrier of herbal extracts. It is expected developed formulation will cure/protect from various periodontal diseases. Further development and evaluations of chewing gums including the isolated compounds on commercial scale and their clinical and toxicological studies are the future challenges

Biography

Reenu Yadav has completed her master's degree (Mpharm and MBA) at the age of 25 years from RGPV University, Bhopal India, Doctorate degree from Nims University, jaipur, India. She has more than seven years of teaching experience and presently working at scan research lab, Bhopal, India, as a scientist. She has published more than 20 papers in reputed journals and guided several students for their research. She has attended number of conferences throughout her career.

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