

Pharma Middle East 2015 - Study of some Indian medicinal plants for their dental care potential and development of oral gel for treatment of periodontal diseases - Reenu Yadav - Oriental College of Pharmacy, India

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Abstract

Natural products have served as a major source of drugs for centuries, and about half of the pharmaceuticals in use today are derived from natural products. The use of natural substances, particularly plants, to control diseases is a centuries old practice that has led to the discovery of more than half of all modern pharmaceuticals. Oral diseases continue to be a major health problem worldwide. Dental caries and periodontal diseases are among the most important global oral health problems, although conditions such as oral and pharyngeal cancers and oral tissue lesions are also significant health concerns. Despite general advances in the overall health status of the people living in industrialized countries, including oral and dental health, the prevalence of dental caries in school aged children is up to 90% and the majority of adults are also affected. There is a strong association between severe periodontal diseases and diabetes. There is also evidence linking poor oral health and systemic diseases, such as cardiovascular diseases, rheumatoid arthritis and osteoporosis, while periodontal diseases and may also contribute to the risk of pregnancy complications, such as preterm lowbirth weight. Hence, the search for alternative products continues and natural phytochemicals isolated from plants used in traditional medicine are considered as good alternatives to synthetic chemicals. The development of bacterial resistance to presently available antimicrobial agents has necessitated the search for new antibacterial agent. It is considered worldwide to explore Indian tradition medicinal herb for

development of the poly herbal dental formulations with dental protection potential. Purpose: The aim of the present work was to develop an oral gel for brushing with antimicrobial activity which will cure/ protect from various periodontal diseases such as periodontitis, gingivitis, and pyorrhea. Methods: Plant materials procured from local suppliers, extracted and standardized. Screening of antimicrobial activity was carried out with the help of disk diffusion method. gel was formulated by dried extracts of *Beautea monosperma*, and *Cordia obliqua* gels evaluated on various parameters and standardization of the formulation was performed. 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 (40 oC and RH 75%±5% for 90 days) to assess the effect of temperature and humidity on the concentration of phenolic and flavonoid contents. The results of accelerated stability conditions were compared with that of samples kept at controlled conditions (RT). The control samples were kept at room temperature (25 oC, 35% RH for 180 days). Results: Extracts possess significant antimicrobial activity at very low concentration (15 µg/disc, 20 µg/disc and 15 µg/disc) on oral pathogenic bacteria. Formulation has optimal characteristics as well as has pleasant appearance, fragrance, texture and taste is highly acceptable by the volunteers. The diffusion coefficient values ranged from 0.6655 to 0.9164. Since, the R values of Korsmeyer Papas were close to 1, drug release

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from formulation follows matrix diffusion kinetics. Hence, diffusion was the mechanism of the drug release. Formulation follows non-Fickian transport mechanism. Most formulations released 50% of their contents within 25-30 minutes. Results obtained from the accelerated stability studies are indicative of a slight reduction in flavonoids and phenolic contents with time on long time storage. When measured degradation under ambient conditions, degradation was significantly lower than in accelerated stability study. Conclusion: Plant extracts possess compounds with antimicrobial properties, can be used as. Developed formulation will cure/ protect from various periodontal diseases. Further development and evaluations oral gel including the isolated compounds on commercial scale and their clinical and toxicological studies are the future challenges.

Bottom Note: *This work is partly presented at Joint Meeting on Pharma Middle East, November 02-04, 2015 Dubai, UAE*

<https://www.omicsonline.org/proceedings/study-of-some-indian-medicinal-plants-for-their-dental-care-potential-and-development-of-oral-gel-for-treatment-of-periodontal-diseases-37471.html>

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