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Treatment of head and neck squamous cell carcinoma using nanogel formulation of anticancer agents

Alok Kumar Pandey, Priya Singh, Swati Rathore, Prashant Sahu and **Sushil Kumar Kashaw**
Dr H S Gour Central University, India

Head and Neck Squamous Cell Carcinoma (HNSCC) is reported to be the 8th leading cause of cancer death worldwide but a safe, convenient and effective treatment is still challenging for researchers. So far, treatment for HNSCC is limited to various surgical strategies. These therapies possess the disadvantage of being painful, harmful and costly, thus have little patient compliance, obligating the need of a safer, effective and compliant therapy. Nanogels can be used effectively to entrap various anti-HNSCC approved anti-cancer drugs for their topical delivery to cancerous squamous cells of skin of head, neck and various other regions. Nanogel being biocompatible, biodegradable and having high drug loading capability can prove to be a good carrier for various anticancer agents with easier administration and lesser side effects. Major problems which may arise against efficient drug delivery can be the level of drug penetration through skin and the specific release of the drug in the carcinoma cells. Skin penetration is itself enhanced by nano-carriers. Further, penetration enhancers and other physical methods may be utilized. Specificity of the drug delivery to target cells can be achieved by using pH based nanogel formulations. Thus, nanogels can prove to be very efficient formulation for tropical treatment of HNSCC and also other skin cancers.

winmove11@gmail.com

Standardization of marketed Balarishta formulations

Anjali K Gohel, Tabassum A Khan and **Rashmi Mallya**
S V K M's Dr Bhanuben Nanavati College of Pharmacy, India

Herbal therapies are traditionally considered harmless and are increasingly being consumed by people without prescription. The quality assessment of herbal formulations is of paramount importance in order to justify their acceptability in modern system of medicines. Standardization involves set of experiments to be conducted in order to ensure the quality, safety and efficacy of the drug or its formulation. In the present study, four different marketed brands of an Ayurvedic formulation, Balarishta viz. Baidyanath, Dabur, Zandu and Nagarjuna has been standardized with respect to their physicochemical (organoleptic properties, pH, specific gravity, total solid content, total alcohol content, reducing and non-reducing sugar content), phytochemical and microbial parameters (total bacterial count, total fungal count and test for specific pathogens viz. *P. aeruginosa, E. coli* and *S. aureus*). A validated HPTLC method for simultaneous identification of three major phytoconstituents present in Balarishta viz. withaferin A, gallic acid and ephedrine has also been developed. This method was used to quantitate the content of withaferin A, gallic acid and ephedrine in all four brands of Balarishta. The stability profile of this formulation under accelerated stability condition, i.e., 40o C, 75% RH for 3 months was accessed. A comparative data of each of the four brands has been generated for all the tests performed.

gohelanjali06@gmail.com

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