

**Institute of Pharmaceutical Technology and
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Faculty of Pharmacy
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I. Symposium of Young Researchers on Pharmaceutical Technology, Biotechnology and Regulatory Science

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Development of sodium hyaluronate-based formulations loaded with nanosuspension for nasal delivery of loratadine: Simplicity of preparation and application

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The unique requirement for delivery of poorly-water soluble drugs has driven a great deal of research into new formulations and routes of administration. Loratadine (LOR) is a H₁ antihistamine drug. It is commonly prescribed for treatment of various allergic conditions. According to BCS, LOR is classified as class II drug. Furthermore, LOR exhibits a pH-dependent solubility. Consequently, oral administration of LOR is associated with variable and poor bioavailability [1]. Moreover, the oral administration of LOR can produce several side effects, including hepatotoxicity, and breathing exertion. Thus, alternative routes of administration such as nasal could be advantageous to overcome these effects [2].

Simple methods were used to prepare the nasal formations (NF). The nanosuspension was prepared by ultrasonication precipitation. The concept of Quality by design (QbD) was followed to link the critical process parameters (CPPs) with the required critical quality (CQAs) attributes and risk assessment to select the optimized CPPs for the preparation of the nanosuspensions that were further formulated into NFs using sodium hyaluronate (Na-HA). The nanosuspension displayed a particle size of 311.55 nm. The NFs showed an enhanced viscosity and mucoadhesive properties. The diffusion was achieved within 1h. The NFs showed a drug and Na-HA dependent diffusion. The formula that contains of 5 mg/ml Na-HA and 2.5 mg/ml LOR showed the highest flux, and permeability coefficient.

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