

## Preparation and Evaluation of Nicotine Slow Release Mucoadhesive Film for NRT\*\*

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### Abstract

**Introduction:** Nicotine replacement therapy (NRT) with gradual decreasing the amount of nicotine is one of the smoking cessation methods. Nicotine dosage forms on the market are including gum and skin patches. Mucoadhesive formulations are the novel drug delivery systems that can be used for NRT. Mucoadhesive nicotine film (MNF) when placed in the upper gum, will adhere to mucosa and release the nicotine in a controlled manner. MNF will meet the immediate and long-term need of the individual to the nicotine, and could decrease his/her dependency on smoking.

**Methods and Results:** The mucoadhesive films were prepared using different conventional bioadhesive polymers such as HPMC, PVP, Na Alginate, Ethyl cellulose and Eudragit RL100; and Glycerin as the plasticizer for formulations of nicotine hydrogen tartrate, which is more stable form of nicotine. The pharmaceutical characteristics of film include rate of drug release and in vitro adhesion, disintegration time and swallow amount were evaluated. The formulations make with PVP have improved adhesion properties and formulation with HPMC (6 cP) or Na.Alginate released nicotine in the average less than an hour. Drug release from formulations contains HPMC (15000cP) took long about 120 minutes, but in formulations contains Eudragit was within 4.5 to over 6 hours.

**Conclusions:** The best formulation with suitable adhesion and rate of release contains Eudragit RL100 and Glycerin that release nicotine for 5 hour.

**Key words:** mucoadhesive, film, nicotine, smoking cessation, slow release

NRT: Nicotine replacement therapy (NRT) gives you nicotine – in the form of gum, patches, sprays, inhalers, or lozenges – but not the other harmful chemicals in tobacco. NRT can help relieve some of the physical withdrawal symptoms so that you can focus on the psychological (emotional) aspects of quitting