
**Chitosan-Gellan Gum Microbeads as Gastro retentive Drug Delivery System of
Anti-Hypertensive drug**

Submitted By

Patel Komal Gandabhai

Supervised By

Dr. Naazneen Surti

M. Pharm, Ph.D.

Associate Professor

Parul Institute of Pharmacy and Research

Limda, Vadodara.

Abstract

The Aim of present investigation was to develop microbeads of Labetalol hydrochloride using chitosan-gellan gum polymer to increase the gastric retention of the dosage form to avoid precipitation of drug in the intestine. Labetalol Hydrochloride is a non-selective α , β -adrenoreceptor antagonist is used in the treatment of hypertension. It is appreciably soluble in lower and higher pH solutions with minimum solubility between pH 6 to 10. The main objective was attempt to increase the gastric retention of drug from dosage form for beneficial in the drug absorption in favour of preventing precipitation of drug in alkaline pH. The microbeads were prepared by Ionotropic gelation method, using polymers like gellan gum and chitosan. The prepared microbeads were optimized on the basis of entrapment efficiency, floating buoyancy, mucoadhesion. The optimized microbeads were further evaluated for floating time, percentage yield, percentage drug loading, micromeritic properties, in vitro drug release studies and surface morphology by SEM. The formulated microbeads were free flowing and SEM studies indicated that the

microbeads were porous, irregular having rough and dense surface with microscopic cracks and wrinkles on the surface. The Optimized formulation which had a composition of 2% gellan gum, 0.5% of chitosan, 0.4% of NaHCO₃. The microbeads showed percentage drug entrapment of 89.34%, percentage floating buoyancy of 76.59% and percentage mucoadhesion 78%. In vitro drug release studies showed a sustained release of drug up to 12 hrs. The mechanism of drug release from microbeads was observed to follow zero order kinetics on the basis of R² value (Regression Coefficient) of various mathematical kinetic models. The data obtained in this study thus suggests that a micro particulate microbeads form of Labetalol Hydrochloride can be successfully designed to give sustained drug delivery.

Key words: Labetalol HCL, Microbeads, Sustained release, Gas-generating agent, Gastro retentive drug delivery system