

## SUMMARY OF UGC MINOR RESEARCH PROJECT

### Grant Details

**F. No.:** 47-862/13(WRO) dated 20<sup>th</sup>Feb 2015

**Title:** Microneedle Based Transdermal Drug Delivery System

**Principal Investigator:** Mrs. Angira G. Purohit

**Duration:** 2015-2017 (Two Years)

**College:** P E Society's Modern College of Pharmacy, Nigdi, Pune 411044.

**Effective date of starting the period:** 20<sup>th</sup>Feb 2015

**Total Grant Approved:** Rs. 2, 90, 000 /-

### SUMMARY

Coated micro needles have been shown to deliver proteins and DNA into the skin in minimum invasive manner. Still detailed studies of preparing coated micro needles and their breadth of applicability are lacking. Androgenic alopecia is the most commonly known form of non-scarring alopecia in humans. Till now, in India minoxidil is marketed as topical solution in aqueous vehicle in treatment of alopecia. High percentage of alcohol present in marketed formulations as a permeation enhancer was known to damage hair, hair follicle and scalp epidermal cells due to dehydration. The goal of the study was to enhance permeation of drug with the aid of microneedles, thus reducing the concentration of alcohol and damage of scalp cells. Stainless steel microneedle roller (1 mm, 142 microneedles per roller) was purchased. Microsyringe was used to coat each individual needle present on the roller. Coated microneedles were studied for coating uniformity, *in-vitro* drug release and *ex-vivo* drug release. Drug release profile of coated microneedles was found to be comparable with marketed solution of minoxidil of the same strength. Accelerated stability study of one month at accelerated temperature and humidity condition showed insignificant rate of degradation.