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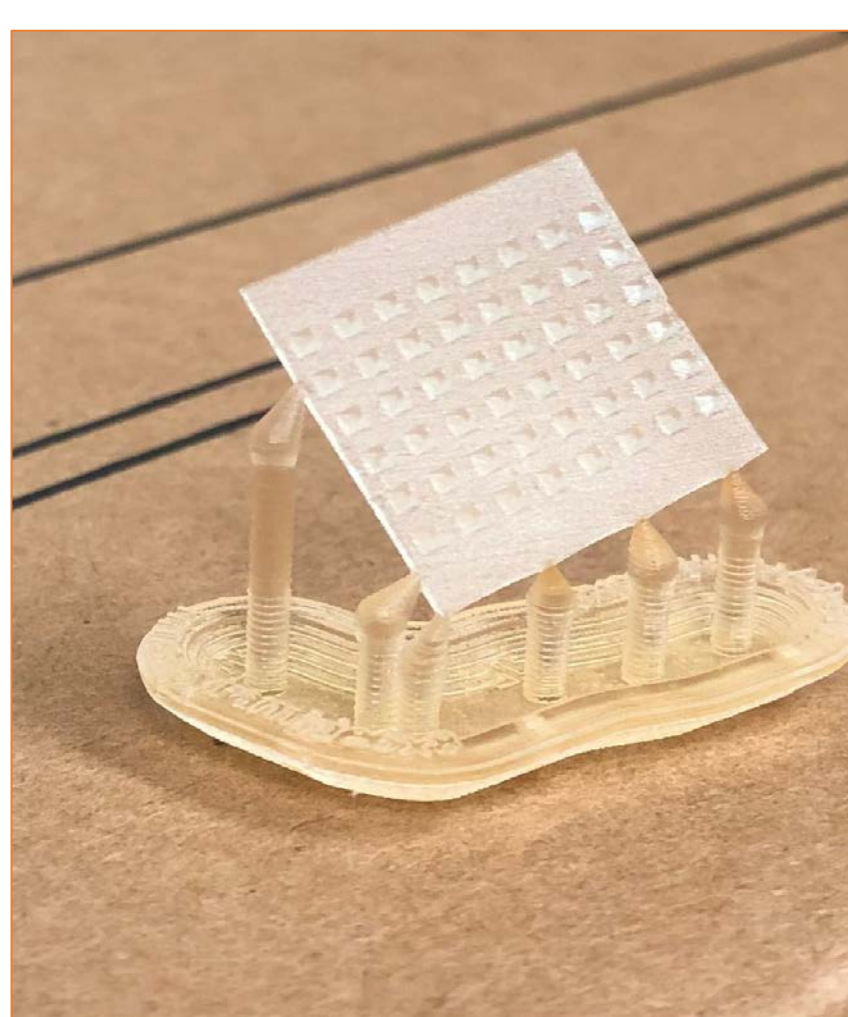


# CANNABIDIOL COATED 3D PRINTED MICRONEEDLES FOR TRANSDERMAL DIFFUSION

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## BACKGROUND

- Microneedles (MN) are micron sized transdermal needles which delivers drug without causing “nociception” (pain).
- During 3D printing Stereolithographic (STL) file is involved in making the 3D object.
- Cannabidiol (CBD) is one among the 104 naturally occurring cannabinoids. It is non-psychoactive.

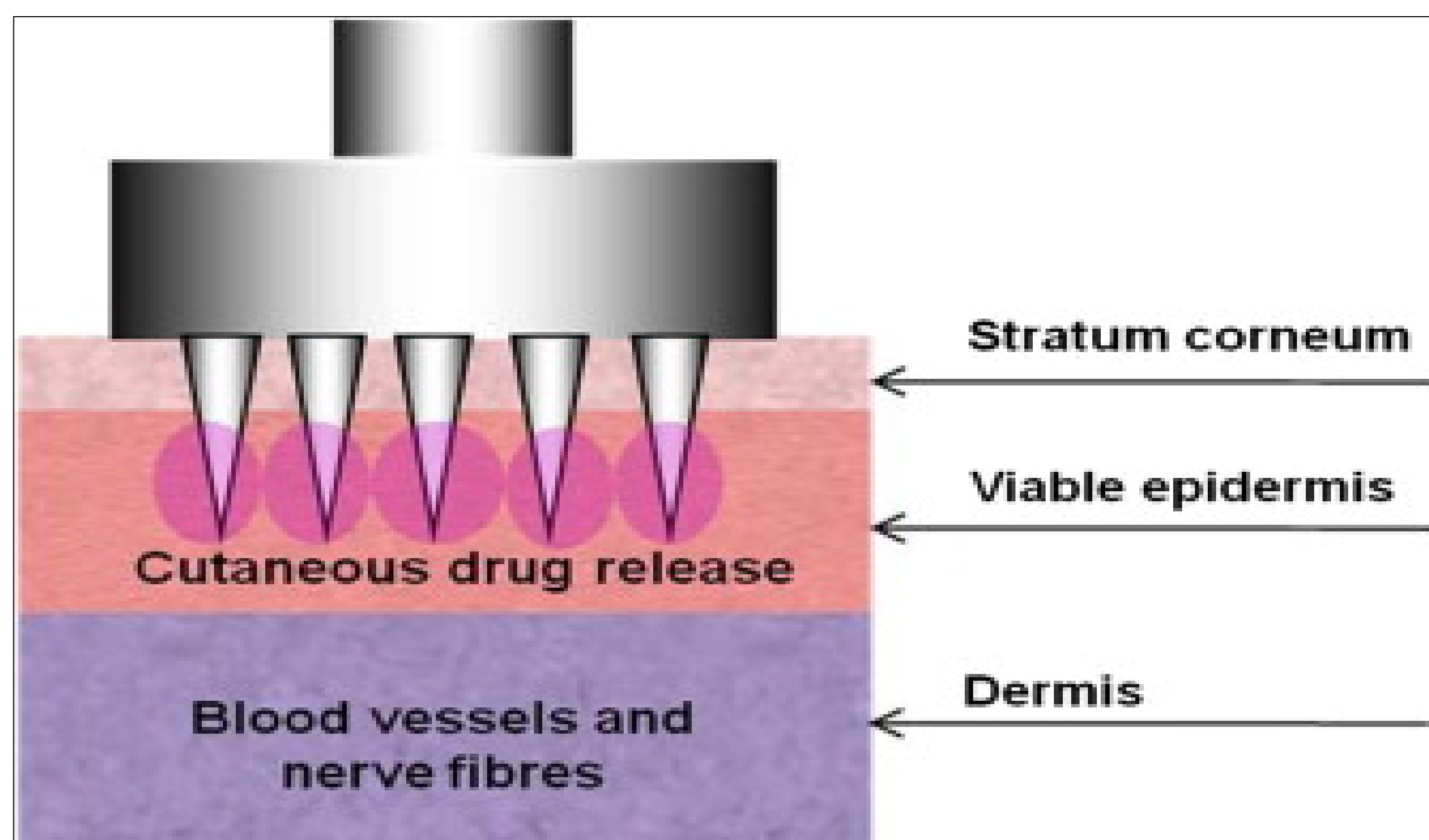


Fig: 1.Schematic representation of microneedles

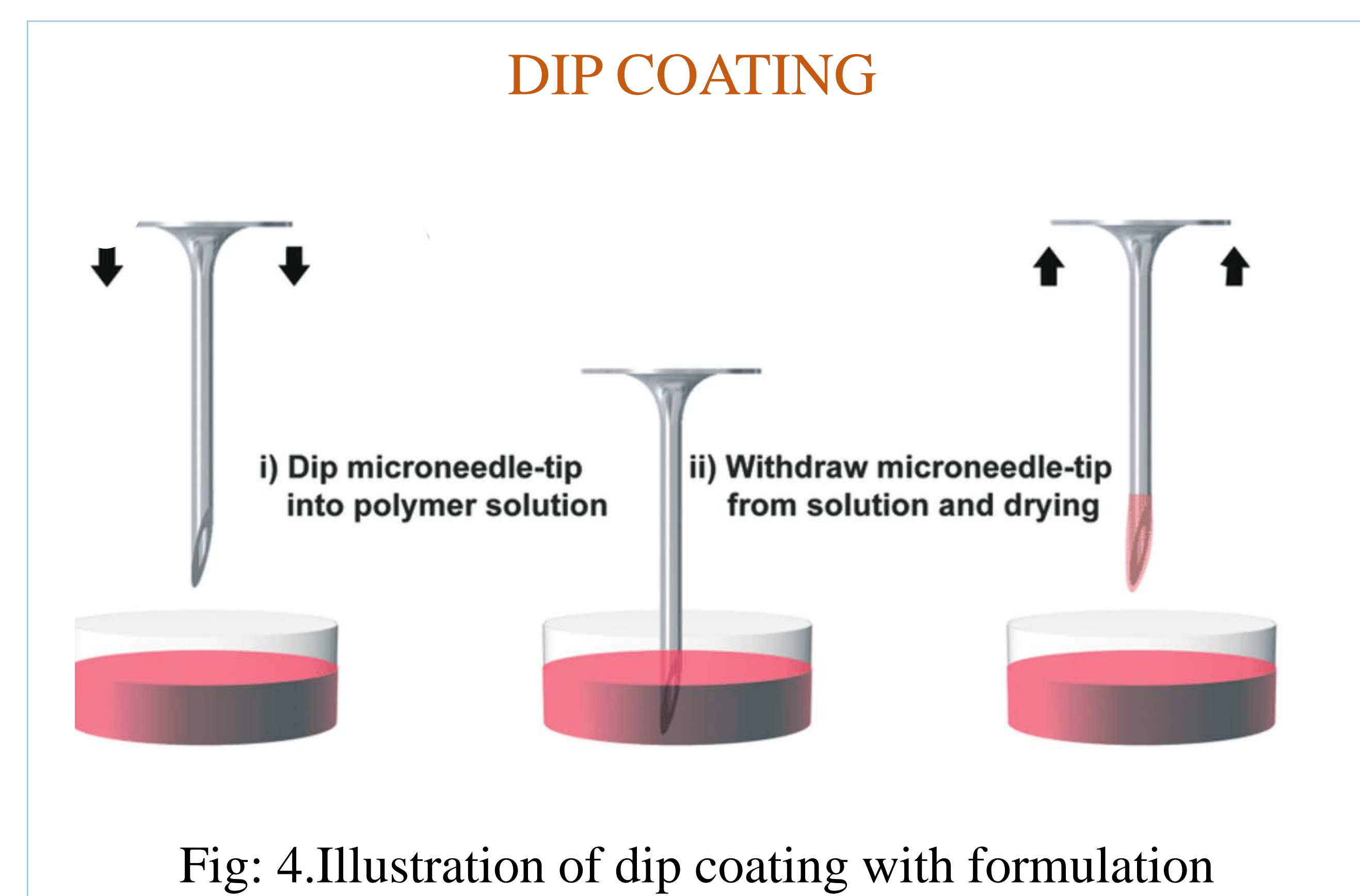
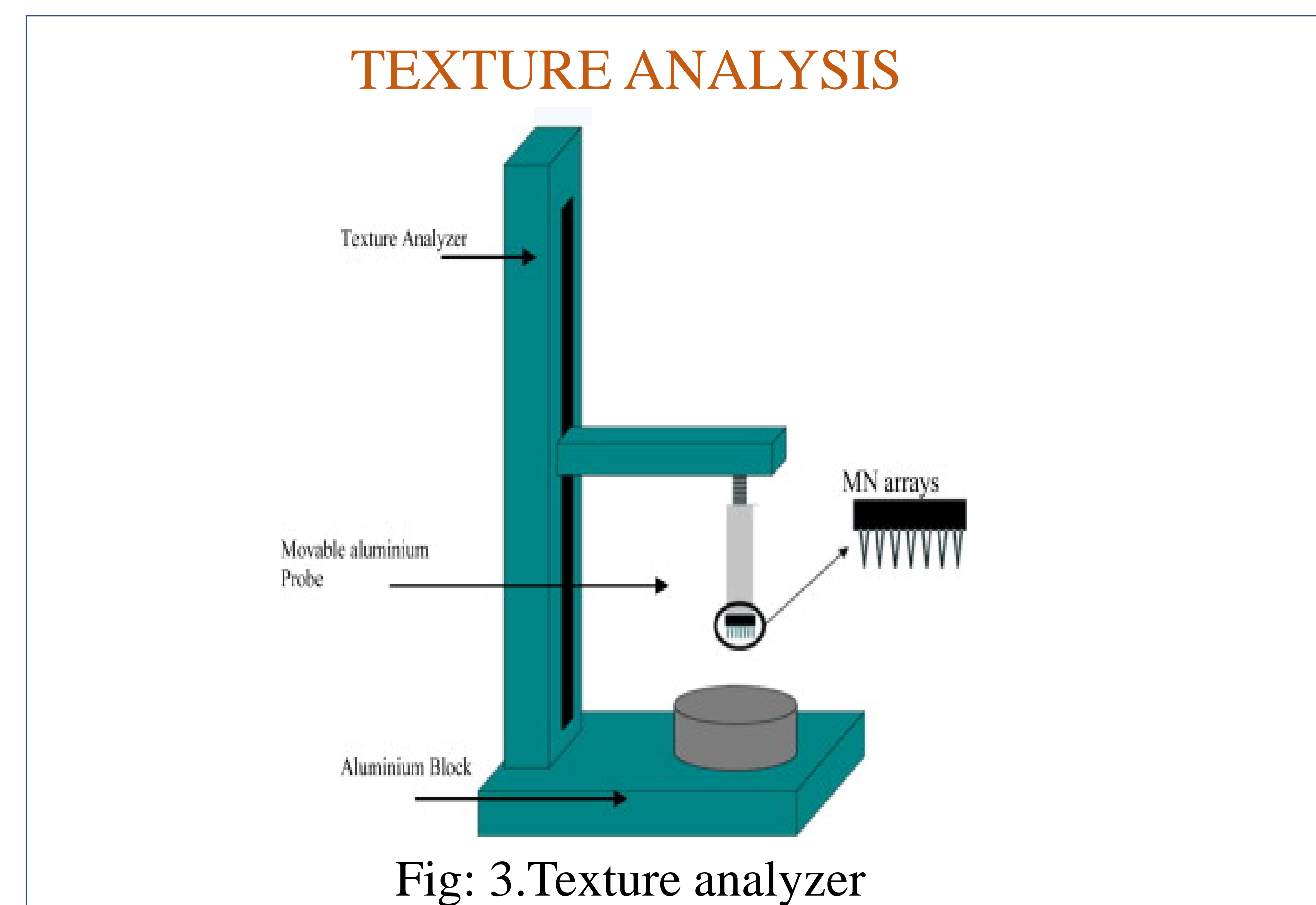
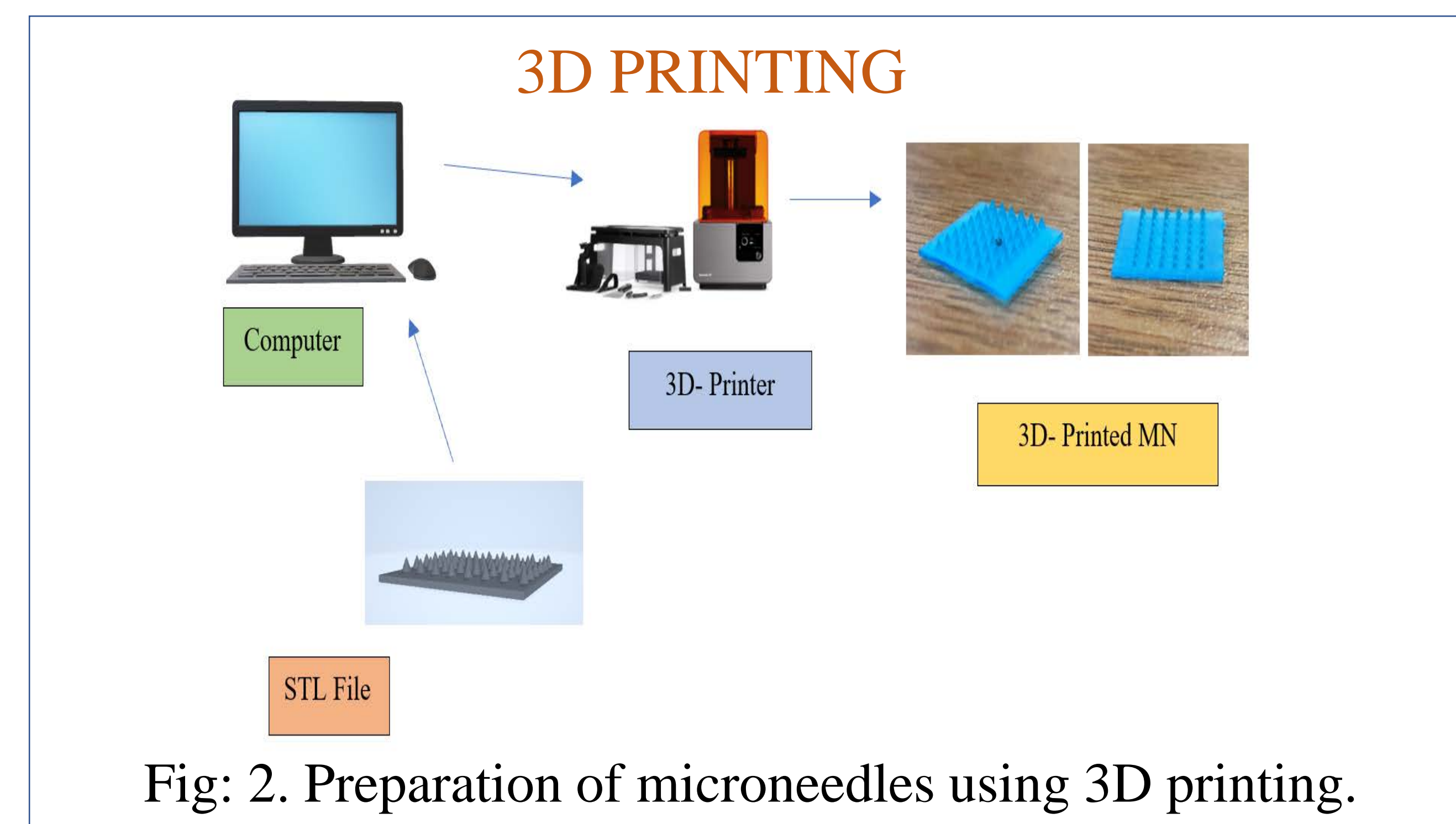
## OBJECTIVE

The main aim of this study is to compare the diffusion of CBD from coated microneedles with topical formulation.

## HYPOTHESIS

The microneedle patch containing CBD will be more effective in delivering across the porcine skin membrane as compared to a topical formulation.

## METHOD OF PREPARATION



## RESULTS

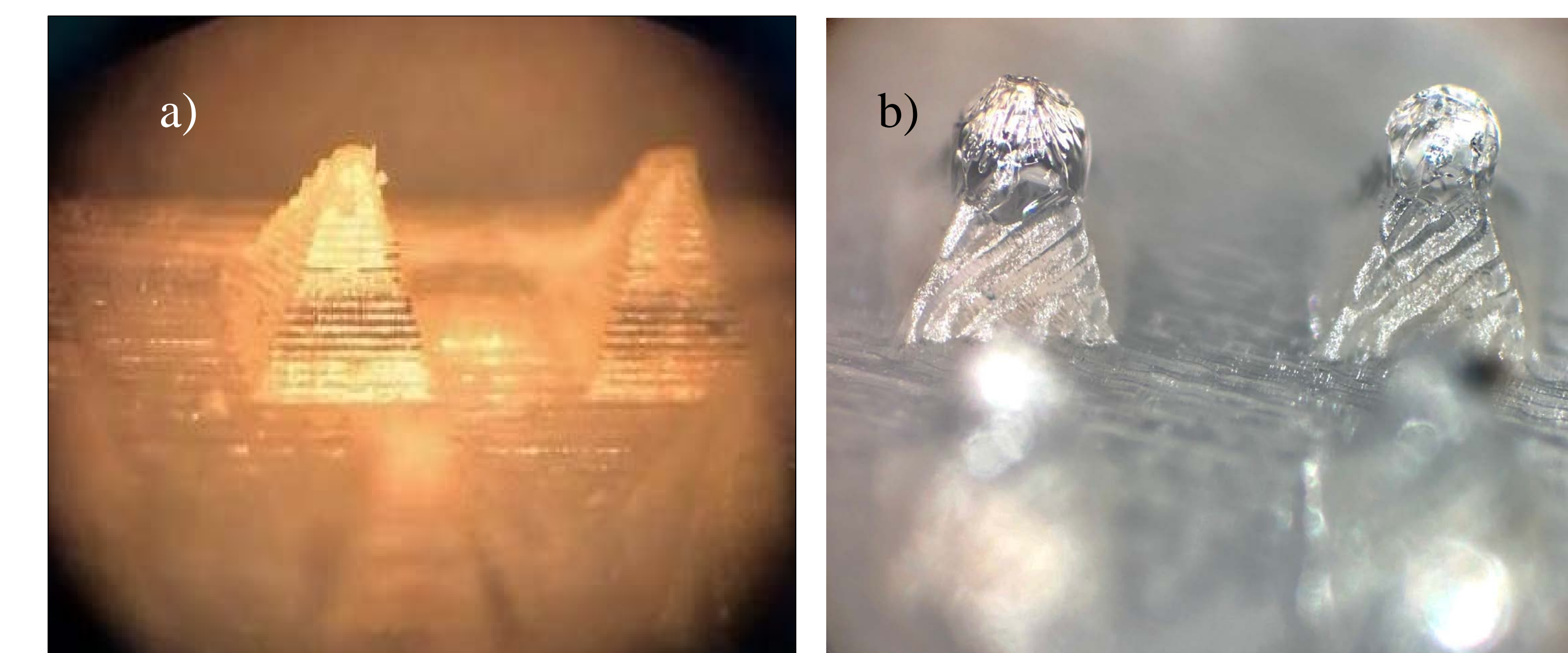


Fig: 5.a) Microscopic image of uncoated MN, b) Coated MN tip

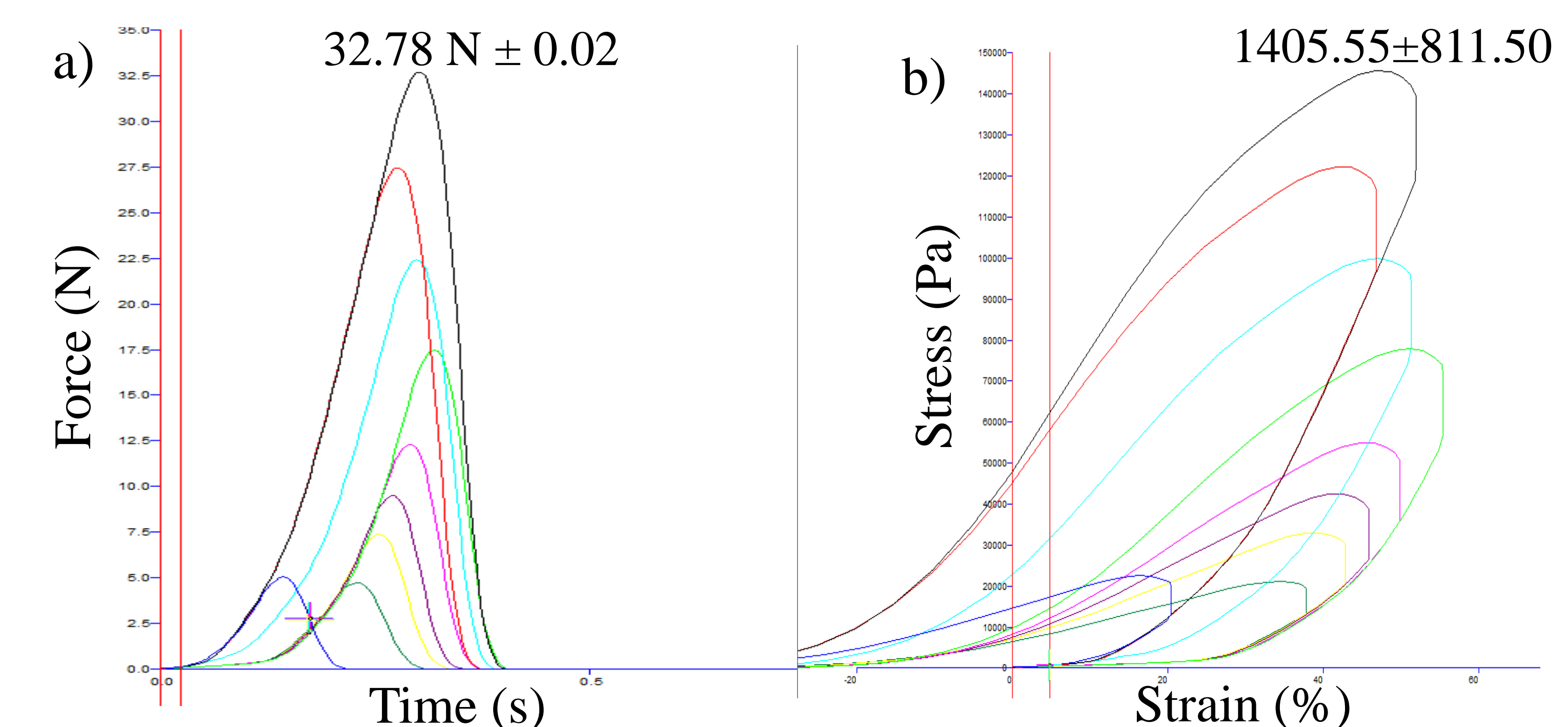


Fig: 6. Graphical representation of a) Hardness, b) Elastic modulus

## LIMITATIONS

- Lack of uniform drug coatings on microneedle patch.
- Dosing is limited to 1 mg.

## CONCLUSIONS

- MN were successfully prepared using 3D printing.
- Hardness was found to be  $32.78 \text{ N} \pm 0.02$  and Elastic modulus was  $1405.55 \pm 811.50$ .
- Coated microneedles were prepared.
- Franz diffusion studies are still going on.