

DBT supports design of new class of microneedles to study neural activities

New Delhi, July 24: A team of researchers at the Institute of Science (IISc), Bengaluru has designed and fabricated a new class of microneedles to study neural activities under a multidisciplinary research funded by the Department of Biotechnology.

The new class of microneedles have been designed for neural recordings from various anatomical regions of the rat's brain such as cortical columns and hippocampus for higher efficacy of measurements. These microneedles will help in the following ways: (i) record signals from the cortical column (for epilepsy/stroke), (ii) characterise the differences between deep and superficial hippocampal neurons, (iii) study the impact of active dendrites in the spatial distribution of local-field potentials, and (iv) understand how behavioral correlates of neurons and Local Field Potentials (LFPs) vary across the transverse axis of the Hippocampus.

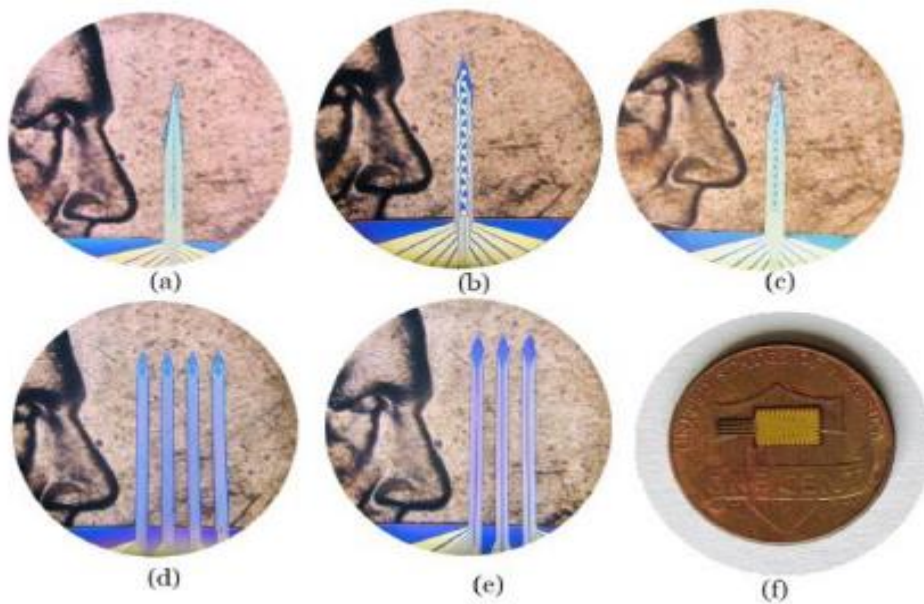


Figure: (a-c) microneedle array for recording signals from Cortical column (Epilepsy/Stroke) (d) array for characterizing differences between deep-superficial hippocampal neurons (e) array for studying impact of active dendrites in spatial distribution of local field potential

The microneedles have been fabricated using a silicon substrate. The characterization of microneedles is in progress before their in vivo uses. Electronic Interface Boards (EIBs) and Microdrive have also been designed and fabricated in-house to be used in conjunction with the microneedles.

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