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Hong Kong links non-invasive eye stimulation with depression and dementia

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The application of non-invasive stimulation of the eye brings new hope for those with depression and dementia



A joint research team from Li Ka Shing Faculty of Medicine, The University of Hong Kong (HKUMed) and City University of Hong Kong (CityU) has discovered that electrical stimulation of the eye surface can alleviate depression-like symptoms and improve cognitive function in animal models.

They discovered that non-invasive stimulation of the corneal surface in the eye that activates brain pathways, resulted in remarkable antidepressant-like effects and also reduced stress hormones in an animal model of depression. This technique called transcorneal electrical stimulation also induced the expression of genes involved in the development and growth of brain cells in the hippocampus.

In related experiments, Yu Wing-Shan and other research members investigated whether this approach could also be used to treat Alzheimer's disease, a common type of dementia with no definitive cure. They found that this non-invasive stimulation in mice drastically improved memory performance and reduced beta-amyloid deposits in the hippocampus, which is one of the hallmarks of Alzheimer's disease.

According to Associate Professor Dr Leanne Chan, the lead researcher at CityU and an expert on the electrical stimulation of visual and non-visual brain targets, "Transcorneal electrical stimulation is a non-invasive method initially developed to treat eye diseases, and it would be a major scientific breakthrough if it could be applied to treat neuropsychiatric diseases."