Title: Bark extract of Chaetocarpus castanocarpus (Roxb.) exhibits potent sedative, anxiolytic, and antidepressant effects through an in vivo approach in Swiss albino mice

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Abstract: Objective: Standard phytochemical investigations were performed to identify the secondary metabolites in the methanol extract of Chaetocarpus castanocarpus bark (MECC) and investigate the neuropharmacological potential of MECC in Swiss albino mice.

Materials and methods: Swiss albino mice were used in the forced swimming test (FST) and tail suspension test (TST) to evaluate the antidepressant effect of MECC. Also, the hole board test (HBT) and elevated plus maze (EPM) were conducted to examine anxiolytic activities. In contrast, the open field test (OFT) and hole cross test (HCT) were employed to evaluate sleeping disorders.

Results: Alkaloids, glycosides, flavonoids, terpenoids, coumarins, and tannins are only a few secondary metabolites identified in MECC by qualitative and quantitative phytochemical investigations. The oral administration of MECC considerably shortened the immobility duration during FST and TST. Encouraging dose-dependent anxiolytic effects were also observed in all relevant experiments compared to the control. Additionally, during the OFT and HCT assessment, a noteworthy decline in the locomotor activities of the experimental animals was observed.

Conclusions: The results of this investigation suggest that the Chaetocarpus castanocarpus bark is a possible source of therapeutic candidates for treating neurological disorders.

Keywords: *Chaetocarpus castanocarpus,* Methanol extract, Phytochemical analysis, Neuropharmacological activity, Antidepressant effect, Anxiolytic activity, Swiss albino mice, Locomotor activity

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