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Enhancement of neuronal dendritic arborisation in cingulate gyrus by treatment with *Centella asiatica* (Linn.) fresh leaf extract in rat neonates

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Introduction: In Ayurvedic system of medicine, Medhaya Rasayana is a combination of many plant extracts and is used as a brain tonic. *Centella asiatica* (CeA) is one of the medicinal herb used in Medhaya Rasayana and is known to be having memory enhancing properties. In the present study, we investigated the role of CeA fresh leaf extract treatment on dendritic morphology of neurons of cingulate gyrus; a region associated with memory.

Methods: Seven day old neonatal rat pups (n=6) were fed with 6 ml/day/kg body weight of fresh leaf extract of CeA for 6 weeks. After the treatment period, the rats were killed, their brains were removed and the neurons of cingulate gyrus were impregnated with silver nitrate (Golgi staining). Cingulate gyrus neurons were traced using camera lucida and dendritic branching points (a measure of dendritic arborization) and intersections (a measure of dendritic length) were quantified. These data were compared with data of age-matched Saline Control rats (SC) which were fed with 6 ml/day/kg body weight of normal saline for 6 weeks (n=6) and Normal Control rats (NC) which remained undisturbed in home cage for 6 weeks (n=6).

Results: The results showed a significant increase in the dendritic length ($p < 0.01$) and dendritic branching points in both apical ($p < 0.05$) and basal ($p < 0.01$) dendrites of cingulate gyrus neurons of rats treated with CeA fresh leaf extract when compared to that of NC group. However, there was no significant difference in the cingulate gyrus neuronal dendritic arborisation between NC and SC groups.

Conclusions: CeA fresh leaf extract has neuronal dendritic growth stimulating property in cingulate gurgys. Present study confirms the neuroprotective property of CeA and provides experimental evidence for neuronal structural enhancement induced by CeA extract in memory related area like cingulate gyrus.

Biography

Mohandas Rao K G completed his PhD from Manipal University in 2003. He is currently the Head of Anatomy Department at Melaka Manipal Medical College, Manipal University, India. He has published more than 100 scientific papers in the field of gross human anatomy and neurosciences in reputed journals.

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