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OC-056 - (23795) - CYTOARCHITECTURE AND CHEMOARCHITECTURE OF THE HUMAN RETICULOTEGMENTAL NUCLEUS IN THE PONS

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The reticulotegmental nucleus (RTN) is a small but functionally significant structure located in the pons of the human brainstem. It is part of the pontine reticular formation and has strong connections with the cerebellum and other brainstem nuclei, serving as a crucial relay in motor coordination. Despite its importance, the cytoarchitecture and chemoarchitecture of the human RTN remain poorly characterized.

In this study, human brainstem samples were serially sectioned at 45 μm using a cryostat, followed by immunostaining and light microscopic examination. The expression patterns of various neurochemical markers were investigated, including acetylcholinesterase (AChE), acetyltransferase (ChAT), calbindin, calretinin, calcitonin gene-related peptide (CGRP), cocaine- and amphetamine-related transcript (CART), GABA, galanin, GFAP, glutamate, glycine, neuropeptide Y (NPY), nitric oxide synthase (NOS), parvalbumin, substance P (NK1), tyrosine hydroxylase (TH), and vasoactive intestinal peptide (VIP).

Reticulotegmental nucleus neurons were small to medium-sized, ovoid and multipolar neurons. Immunoreactivities for AChE, ANF, CART, Cb, CGRP, ChAT, Cr, Enk, GABA, GFAP, Glut, glycine, NeuN, NOS, NPY, Pv, SP, and TH were detected in the RTN. The intensity of staining was higher for calbindin (Cb), calretinin (Cr), calcitonin gene-related peptide (CGRP), enkephalin (Enk), gamma-aminobutyric acid (GABA), glial fibrillary acidic protein (GFAP), nitric oxide synthase (NOS), parvalbumin (Pv), and tyrosine hydroxylase (TH).

The neurotransmitter profile of the reticulotegmental nucleus (RTN) of the pons aligns with its role in motor coordination, postural control, and sensorimotor integration. The presence of distinct neurochemical markers highlights its diverse neuronal composition and underscores its involvement in cerebellar modulation and movement regulation.

Palavras-chave : brainstem, chemoarchitecture, reticulotegmental nucleus