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Histomorphology, cytoarchitectonic organization and laminar distribution of $\alpha 1$ gabaa neurons in the gray matter of the spinal cord of *Cricetomys gambianus*

Maidawa S M, Ali M N, Imam J, Nzalak J O , Salami S O¹, Hassan A Z² and Ojo SA

¹University of Ilorin, Nigeria

²Ahmadu Bello University, Nigeria

This study was carried out to provide detailed description of the histomorphologic features, cytoarchitectonic organization and laminar distribution of the $\alpha 1$ GABAA neurons in the gray matter of the spinal cord of the African Giant Rat (AGR). Four (4) adult AGRs of both sexes were euthanized using halothane inhalant anesthetic by the application of the open-drop method. Evisceration and dissection of skin and epaxial and hypaxial muscles of the rats were done after fixation of the animals in 10% formalin. The spinal cord was removed from the vertebral column by laminectomy and removal of osseous pedicle surrounding the vertebral canal using a bone cutter and a rongeur and placed in bouin solution. Serial transverse sections (5 μ m thick) from each segment of the spinal cord were made using a rotary microtome and stained with cresyl violet for the histomorphologic and cytoarchitectonic studies and with rabbit polyclonal antibodies (1/500) to GABAA Receptor alpha 1 for the immunohistochemical study. Results revealed characteristic histomorphologic features including oval outline of the spinal cord and lateral projection of the ventral horn of the gray matter in the cervical and lumbar regions. The thoracic region was characterized by a circular outline, reduced gray matter and projection of lateral horn from the intermediate gray substance. The gray matter of the AGR spinal cord was organized into ten (10) layers based on the cytoarchitectonic characteristics of the nerve cells in the gray matter. The distribution of nerve cells with $\alpha 1$ GABAA receptors in the gray matter was widespread across the laminae with detailed morphology of the nerve cells revealed in laminae 8 and 9 in which a moderate to strong staining of $\alpha 1$ nerve cells was observed. Immunoreactivity for $\alpha 1$ GABAA neurons was observed across all layers of the gray matter of the spinal cord of the AGR.