

UNIVERSITI TEKNOLOGI MARA

**ULTRASTRUCTURAL FEATURES OF NORMAL
SPRAGUE DAWLEY'S BRAIN CELLS UNDER
TRANSMISSION ELECTRON MICROSCOPE
(TEM)**

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ABSTRACT

Limited references involving the normal ultrastructure of brain cells image especially neurons by using Transmission Electron Microscope (TEM) at UiTM Faculty of Pharmacy's Imaging Center (iMACE) had made many researches related to neurons difficult to be observed and compared with the normal structure. As for that, this study will serve as standard reference for future brain related studies of TEM image in iMACE. Transmission Electron Microscope (TEM) which is the latest technology of electron microscope using the charge coupled device (CCD) camera had been used to observed the ultrastructure of neurons. The structure that are successful to be observed are common structures which including nucleus, mitochondria, Golgi apparatus, agranular reticulum, cytoplasm, vacuoles and cell membrane. On the other hand, specialized organelled in neuron tha had been observed are neurofilaments and Nissl bodies. However, synapses were unable to be identified in the micrograph.

CHAPTER 1

INTRODUCTION

1.1 Background of Study

Brain is not only the most vital organ in the body; it is also the most complicated. It controls voluntary movement and regulates involuntary actions of body. Brain is the main aspect of our consciousness. It stores memories, gives personality and makes us feel emotions, thus makes that we are. Brain develops from ectodermal neural tube (Tortora & Derrickson, 2008). It consists of 4 parts which are brain stem, cerebellum, cerebrum and diencephalon (Tortora & Derrickson, 2008). Cerebrum is the largest part and divided into right and left portion (“Anatomy and physiology of the brain and spinal cord,”). Brain stem includes midbrain, pons and medulla oblongata. Besides, diencephalon is included thalamus and hypothalamus. Surrounding the brain are cranium and cranial meninges which protect the brain. Cranial meninges are divided into three layers which are outer dura mater, middle arachnoid mater and inner pia meter (Tortora & Derrickson, 2008). There are 2 layers of dura mater which are periosteal layer (external) and meningeal layer (internal). Three extensions of dura maters separate brain parts. They are falx cerebri (separates cerebrum parts), falx cerebella (separates cerebellum parts) and tentorium cerebella (separates cerebrum and cerebellum).