Chapter 3

AIM AND SCOPE OF THE STUDY

ABSTRACT

This chapter deals with the scope of the present study and the spectroscopic tools to employ the analyze of aluminium toxicity, and the protective actions of antidotes deferoxamine and deferiprone in aluminium intoxicated mice via Ultraviolet–Visible Spectroscopy (UV–Vis) based biochemical estimation, Fourier Transform Infrared Spectroscopy (FT-IR), Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP–AES), Fourier Transform Raman Spectroscopy (FT–Raman), Scanning Electron Microscope (SEM), X–ray diffraction (XRD), and Light Microscope for Histopathological examination, respectively.
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Aluminium toxicity is one of the heavy metal toxicity in which the human beings are exposed via vessels, bakery items and pesticides etc. This heavy metal toxicity can lead to physiological disorders in humans and animals. Most importantly, the aluminium toxicity may initiate the Alzheimer disease. Further, it affects the body organs including liver, kidney, spleen, bone etc. Antidotes that act as chelating agents which can be used as therapeutic agents in combination or alone may permit us to develop new therapies against aluminium toxicity mediated dysfunctions. Further, investigations are required to understand the molecular mechanism of aluminium. Spectroscopic tools may facilitate understanding the aluminium induced metabolic changes and may support the development of new chelating agents and chelation therapy.

Therefore, the aim of the present study was to investigate the molecular mechanism of aluminium toxicity and protective effect of DFO and DFP via

- Ultraviolet–Visible Spectroscopy (UV – Vis) based biochemical estimation
- Fourier Transform Infrared Spectroscopy (FT – IR)
- Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP – AES)
- Fourier Transform Raman Spectroscopy (FT – Raman)
- Scanning Electron Microscope (SEM)
- X – Ray Diffraction (XRD)
- Light Microscope – Histopathological examination
- Biochemical estimations

76