Spectroscopic characterization of copper (II)-based tetrapeptides

ABSTRACT

Five different histidine and aspartic acid based tetrapeptides were designed using LOMETS and PyMol. They were chemically synthesized following the solid phase Fmoc-peptide synthesis protocols and were analysed using the reverse-phase High Performance Liquid Chromatography (HPLC) C_{18} analytical column for the purity. The peptides were further analysed by Liquid Chromatography Mass Spectrometry (LCMS) to see if the desired peptides were synthesized systematically. Copper(II) acetate monohydrate was bound to the peptides and the best molar ratio for the binding of these metal salts to peptides was 2:1. These observations were monitored through several spectroscopic techniques. The first physical observations for the successful synthesis of metallopeptides were the colour change, the melting/decomposition points and the solubility of these metallopeptides. Due to the visible colour change of the peptides to metallopeptides, UV-Visible spectroscopy and UV-Fluorescence spectroscopy were used as a qualitative analysis tests and the results were in agreement with other researchers' data from similar researches.

Keyword: Copper(II); Histidine; Aspartic acid; Tetrapeptides; Spectroscopic