Binding of an Oxindole Alkaloid from *Uncaria tomentosa* to Amyloid Protein (Aβ1-40)

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The primary aim of this work was to determine the interactions of an oxindole alkaloid (mitraphylline) isolated from *Uncaria tomentosa* with β-amyloid 1-40 (Aβ1-40 protein) applying the capillary electrophoresis (CE) method. Specifically the Hummel-Dreyer method and Scatchard analysis were performed to study the binding of oxindole alkaloids with Aβ1-40 protein. Prior to these studies extraction of the alkaloid of interest was carried out. Identification of the isolated alkaloid was performed by the use of thin-layer chromatography (TLC) and high-performance liquid chromatography (HPLC) combined with electrospray ionization mass spectrometry (ESI-MS). The proposed approach was proved to be an efficient and accurate method for specific compound isolation and identification purposes. Moreover, analytical information from the CE approach can be considered as the valuable tool for binding constant determination. The binding constant of mitraphylline with Aβ1-40 protein determined by the Hummel-Dreyer method and Scatchard analysis equals $K = 9.95 \times 10^5$ M^{-1}. The results obtained showed the significant binding of the tested compound with Aβ1-40 protein. These results are discussed and interpreted in the view of developing a strategy for identification of novel compounds of great importance in Alzheimer disease therapy.

Key words: Binding Constant, Capillary Electrophoresis (CE), Hummel-Dreyer Method, Scatchard Analysis