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Title of Thesis: Construction and Performance Characteristics of New Ion Selective Electrodes Based on Carbon Nanotubes for Determination of Meclofenoxate Hydrochloride and Selegiline Hydrochloride

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Abstract :

The presented thesis describes the preparation and investigation of the performance characteristics of new plastic membrane electrodes, carbon paste electrodes and carbon nanotubes chemically modified carbon paste electrodes for potentiometric determination of meclofenoxate hydrochloride (MecloCl) and selegiline hydrochloride (SelCl). In these electrodes, the active element is polyvinyl chloride (PVC) membrane as in case of plastic membrane electrodes that plasticized with dioctyl adipate (DOA) containing an ion-exchanger of the investigated drug with phosphomolybdic acid (PMA) or phosphotungstic acid (PTA). Carbon paste electrodes presented low cost and easy construction by simple mixing of graphite powder with dioctyladipate (DOA) as a plasticizer and an ion-exchanger of the investigated drugs with phosphomolybdic acid (PMA) or phosphotungstic acid (PTA). The same procedure is done for carbon nanotubes chemically modified carbon paste electrodes with addition certain amount of multi-wall carbon nanotubes which have excellent effect for improving the performance characteristics of the studied electrodes for determination the investigated drugs. Carbon nanotubes chemically modified carbon paste electrodes have better conductivity, higher potential responses, faster response time, longer operational lifetime and wider linear concentration range than carbon paste electrodes due to carbon nanotubes possess unique geometric, mechanical, electronic, and chemical properties as high mechanical strength, high electrical conductivity, high thermal conductivity and high surface area.

Keywords:

Carbon paste electrodes; Ion selective; Selegiline; Meclofenoxate; Carbon nanotubes.