Abstract

Charles University, Faculty of Pharmacy in Hradec Králové

Department of: Pharmaceutical Botany

Consultant: Ing. Kateřina Macáková, Ph. D.

Student: Markéta Šilhová

Title of Thesis: Interactions of alkaloids with transition metals II.

Copper is an important component of the human body. It is involved in the right functioning of organ systems and is also a part of many important body enzymes. It is necessary to maintain a balanced amount of copper in the body in order to avoid excess or deficiency, which can lead to various diseases.

The aim of this diploma thesis was to determine the copper chelating and copper reducing effects of isoquinoline alkaloids berberine chloride, canadine, corydaline, sculerine, sinactine, stylopine, tetrahydropalmatine, allocryptopine, protopine, corycavamine and cryptopine. In experimental measurements the determination of chelation of copper ions with hemytoxyline and the determination of chelation and reduction of copper ions using disodium salt of bathocuproindisulfonic acid was performed. The highest reducing activity was exhibited by scoulerine, whose structure in comparison with other alkaloids contains hydroxyl groups and which has been exhibited in the past to inhibit the growth of tumour cell. The lowest reducing activity was measured for protopine alkaloids and corydaline. The reducing and chelating activity depends on the chemical structure and conditions in which the experiment is performed.

Key words: copper, reduction, chelation, isoquinoline alkaloids, scoulerine