ABSTRACT

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Title of diploma thesis: **Antiproliferative effect of *Myrica rubra* extracts in cancer cell lines**

Myrica rubra is a woody herb planted in south-eastern Asia, especially in China. Berries, leaves and bark of *Myrica rubra* plant have been used in Chinese folk medicine for hundreds of years. Recent studies established significant biological effect of *Myrica rubra* extracts in some of the cancer cell lines.

The aim of this study was to test anticancer activity of essential oil from *Myrica rubra* leaves (MO) to gastrointestinal cell lines (CACO-2 and HCT-8) and study mechanisms of MO effect (production of free radicals and apoptosis activation). Other goal was to compare antiproliferative effect of essential oil´s fraction and α-humulene a β-caryophyllene, two most common components found in MO.

Proliferation were evaluated by three different methods (NRU, MTT, x-Celligence), quantification of oxidative stress was researched using DCF. Apoptotic marker expression was examined by western blot.

Results showed *Myrica rubra* oil inhibited the proliferation of investigated cell lines; CACO-2 seems to be more sensitive. From acquired fractions, fraction 2, 6 and 7 appeared to be the most effective. The antiproliferative activity of α-humulene a β-caryophyllene was observed in higher concentrations, α-humulene was more effective.

Production of free radicals was dependent on concentration of MO and time.

The treatment with essential oil induces higher expression of some apoptotic markers in cells – for example caspase 3 and Bax protein.