Abstract

Determination of nitrates in herbal products and evaluation of their antimicrobial activities

(Diploma thesis)

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The aim of this diploma thesis is to ascertain the content of nitrates in herbal teas and evaluate the microbiological toxicities. We tested 47 specimens of herbal teas, bought in Pharmacies and in herbalist shops.

Occurrence of moulds and yeasts in specimens was measured with a technique of counting colonies, cultivated at 25 ºC on agar plates with yeast extract, glucose and chloramphenicols after five days of incubation. Occurrence of *Escherichia coli* in specimens was measured with another technique of counting colonies cultivated at 44 ºC on agar plates with 5-Bromo-4-chloro-3-indolyl-_-D-Glucoronid, after 24 hours of incubation.

The presence of nitrates was measured with a method of High Performance Liquid Chromatography with a detection of UV light spectrum, in accordance with standards setting limits for nitrates in food.

Nearly each specimen contained moulds, of which mostly *Rhizopus niger* (47.37 %) and *Aspergillus niger* (33,33 %). No yeasts were found in tested specimens. The Gram-negative bacteria *Escherichia coli* was found only in one herb tea – Milk Thistle (*Sylibum marianum*), amounting to $1.2 \cdot 10_2$ cfu/g. All tested herbal teas met criterions of the respective standards and regulations. The herbal tea, Stinging nettle (*Herba urticae*), did not meet the limits for nitrate ion in accordance with standards. The amount exceeded for 19.2 mg/l.

Key words: herbal tea; *Aspergillus niger; Rhizopus niger;* yeasts; *Escherichia coli;* nitrates.