A193 Antibacterial activity of *Hypericum atomarium* Boiss. aerial parts

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Hypericum atomarium Boiss. subsp. *D geni* (Bornm.) Hayek (Hypericaceae) is an endemic and rare plant species which was not investigated untill now. Aerial parts in flowering phase were collected from natural locality near village Manastir, Serbia in July 2001. Ethanolic (21.30%), (A), acetone (10.05%) (B) and chloroform (10.20%) (C) extracts were obtained. Phytochemical screening using HPLC analyses (1,2) showed the presence of hypericin, pseudohypericin, degradation products of hyperforin, flavonoids and xanthones in both A and B. Extract C contained significant proportions of compound which according to UV and NMR data could be some degradation product of hyperforin. Quantification of hypericin amount was done using UV-VIS spectrophotometry (3). Antimicrobial activity was determined by agar dilution method (4). The amount of hypericin was relatively small (0.041-0.053). Acetone extract contained higher amount of hypericin. The three extracts assayed were active against Gram-positive microorganisms (Table 1), while antimicrobial activity against Gram-negative microorganisms and fungi was not significant (MIC>1000). High proportion of γ-pyrones and degradation products of hyperforin could explain its activity.

	MIC(μg/ml)		
Microorganism	A	B	C
Bacilus subtilis ATCC 6633	50	25	6.25
Bacillus IP5832	25	25	6.25
Micrococcus luteus ATCC4698	25	12.5	3.12
Staphylococcus aureus ATCC25922	25	25	6.2

References: 1. Menković N. et al. (2000) Planta Med. 66: 178. **2.** Hölzl J., et al. (1987) Dtsch. Apoth. Ztg. 127: 1227. **3.** Ph. Eur. III Ed., Sipp. 2001, Council of Europe, Strasbourg. **4.** Ericsson HM. et al. (1971) Acta Pathol. Microbiol. Scand. Suppl 217: 3.

A194 Antimicrobial activity of selected plants representing organic and conventional culture

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Plant phenols have several functions in plants, e.g. protection of the plant against diseases and oxidative stress. The amount of phenols in a plant seems to depend on the environmental and growing conditions of the plant; wild berries synthesize more phenols than the ones cultivated conventionally in garden. In organic culture all chemical fertilizers, pesticides and herbicides are declined and, unlike in the conventional culture, the organic plants have to exert themselves against weeds, pathogens and harmfull insects. This might cause them to synthesize more phenols than they conventionally do.

50 plant samples including both organically and conventionally grown food plants and a range of nine different microbial species were selected for the study. The plants were extracted (MeOH) and antimicrobial screening tests were performed using agar diffusion method (1). The most significant differences were found between organically and conventionally cultivated garlic against *Eschericia coli*, *Staphylococcus epidermis*, *Micrococcus luteus*, *Bacillus subtilis*, *Candida albicans* and *C. krusei*. In these cases the antimicrobial activity of organic garlic was stronger than that of conventional garlic. E.g. the inhibition zones of organic garlic were 36 mm against *C. albicans* and 29 mm against *C. krusei*. The representing values for conventional garlic were 34 and 26 mm. Amphotericin B (positive control) failed to inhibit the growth of *C. albicans* but agaist *C. krusei* the inhibition zone was 14 mm.

In many cases no antimicrobial activity could be detected which is probably due to the lower proportion of antimicrobial compounds in vegetables compared to that of herbs and spices. Thus, in these cases the difference between organic and conventional plant samples remained as well minor or absent.

The differences in antimicrobial activity can be due to phenols in the plants but further investigation is needed. As a next step, the most active plant samples will be fractionated in order to discover and characterize the active compounds.

Reference: 1. Rauha, J-P et al. (2000) Int. J. Food Microbiol. 56: 3-12.