

## MARKET ASSESSMENT OF HERBAL SUPPLEMENTS IN ROMANIA FOR A PERIOD OF 10 YEARS USING A HOLISTIC APPROACH

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Almost nonexistent in the early '90s, herbal supplements market gained an important dimension to Romanians, with the growing awareness and the amounts that people are willing to pay for improving their health. Since this segment is difficult to monitor by market research companies, we propose in this paper a pleading in favor of increasing consumption of therapeutic and aromatic plant products, based on a holistic national approach. Following a 10-year survey (period 2001–2010), we analyzed some specific statistical parameters, such as: top and value sales of dietary supplements in Romania; the average consumption of herbal supplements per capita; share of organic crop areas in the used agricultural area; the turnover of indigenous industry in harnessing the potential of ethnopharmacology; educational attainment by age group; death rates of chronic diseases; life expectancy at age 65; existence of data-bases accessible *via* Internet as a useful tool for information and international promotion of Romanian medicinal plants (420 species); surveys on the treatment of diseases with natural products *versus* synthetic drugs. In

conclusion, if 10 years ago herbal supplements market was almost insignificant, currently, the population shows flexibility in choosing products that are based on active natural substances, especially the social categories with high education and increased access to information. Even sales have tripled in the period 2008–2010, however remains an annual average consumption per capita of 9.5 euros, while in countries like Poland, Czech Republic or Slovakia values vary between 12–15 euros/capita, rising in Western Europe up to 25. Approximately 85% of the raw material used by Romanian manufacturers comes from native flora. On education, health and life expectancy, these parameters improved over the studied period, the largest increase (25%) occurring in the educational attainment of the 55–64 age group, which is also the age of onset of many chronic and degenerative diseases.

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## ANTI-INFLAMMATION EFFECT OF THAI HERBAL EXTRACTS FOR POTENTIAL ORAL USE

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This work describes studies on the crude extracts from plants of family Rutaceae, Asteraceae and Maliaceae, which have been claimed to possess anti-microbial and anti-inflammatory activity. Cytotoxicity of these extracts on human gingival fibroblasts (HGF) (CRL 2014) and monocytes (U937) were tested using the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) method. In addition, TNF- $\alpha$ , IL-1 $\beta$  and IL-6 released from HGFs and monocytes treated with bacterial lipopolysaccharides (LPS) were determined using the enzyme-linked immunosorbent assay (ELISA). The results showed that the IC<sub>50</sub> of plant extracts for HGFs were in the range of 308.1 to 1168.7 mg/mL, while the IC<sub>50</sub> for macrophages were in the range of

54.6 to 90.9 mg/mL. Stem bark of *Cratoxylum formosum* demonstrated a comparable inhibitory activity to standard medication, dexamethasone, on TNF- $\alpha$  released from both cells, but showed detectable reduction of IL-1 $\beta$  only in macrophages. Other plant extracts did not show any significant reduction in inflammatory cytokines from macrophages. Moreover, leaf and branch of *Murraya paniculata* showed greater inhibitory activity than dexamethasone on the production of TNF- $\alpha$  from stimulated HGFs. Therefore, these plant extracts may be good candidates for further drug development, especially for use in treatment of periodontal diseases. This work is supported by the grant from the Faculty of Dentistry, Mahidol University.