HERBAL DIETARY SUPPLEMENTS CONSUMPTION IN ROMANIA FROM THE PERSPECTIVE OF PUBLIC HEALTH AND EDUCATION

MIHAELA STOIA[1], SIMONA OANCEA[2]

[1,2]*"Lucian Blaga" University of Sibiu*

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Abstract: *Herbal supplements consumption experienced high growth in Romania, with the rising 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, our paper aims at processing the data available at national level, based on a holistic 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; crop area, production of medicinal and aromatic plants and indigenous industry capability in harnessing the potential of ethno-pharmacology; educational attainment by age group; death rates of chronic diseases; life expectancy at age 65. In conclusion, the annual average consumption per capita is lower than in other European countries, but forecasts are optimistic. Education, health and life expectancy have improved over the studied period, and follow a positive forecast. We found significant correlations between herbal supplements consumption, educational attainment and health indicators (r = 0.9).*

Cuvinte cheie: *suplimente alimentare vegetale, educaţie, sănătate, prognoză*

Rezumat: *Consumul suplimentelor din plante a cunoscut o mare dezvoltare în România, odată cu creşterea conştientizării şi cu sumele pe care populaţia este dispusă să le aloce îmbunătăţirii sănătăţii. Deoarece acest segment este dificil de monitorizat de către companiile specializate în studii de piaţă, scopul lucrării noastre este de a prelucra datele existente la nivel naţional, utilizând o abordare holistică. Am urmărit un studiu pe 10 ani (perioada 2001-2010), în care am analizat parametri statistici specifici, precum: valoarea şi topul vânzărilor de suplimente alimentare în România; consumul mediu de suplimente din plante/cap de locuitor; suprafaţa cultivată, producţia de plante medicinale şi aromatice şi potenţialul de valorificare etnofarmacologică al industriei autohtone; nivelul educaţional pe grupe de vârstă; rata mortalităţii prin boli cronice; speranţa de viaţă la 65 ani. În concluzie, consumul mediu/cap de locuitor este inferior altor ţări europene, dar prognozele sunt optimiste. Am găsit corelaţii semnificative statistic între consumul de suplimente din plante, nivelul educaţional şi indicatorii de sănătate (r = 0.9).*

INTRODUCTION

The use of, and search for, drugs and dietary supplements derived from plants have accelerated in recent years, since industrialized societies are developing new phytopharmaceuticals, and, furthermore, nutraceuticals, which claim to prevent chronic diseases, improve health, delay the aging process, and increase life expectancy.(1) Translation of traditional remedies into phytomedicines, nutraceuticals and dietary supplements is based on the role of phytochemicals, which are increasingly recognized as regulators of cell signaling.(2,3) The global herbal supplements and remedies market is forecast to reach US $ 93.15 billion by the year 2015, and $ 107 billion by the year 2017, spurred by growing aging population and increasing consumer awareness about general health and well being, according to a new report from Global Industry Analysts Inc.(4) As stated by the same source, Europe is accounting for the largest share of the world market. According to the World Health Organization, approximately 25% of modern drugs used in the United States have been derived from plants.(5) Herbal remedies are seen by some as a treatment to be preferred to pure medical compounds which have been industrially produced.(6)

The economic pressure on the pharmaceutical industry to provide new compounds has stimulated the adoption of several new technologies, such as micro reactor and flow chemistry, as a tool to minimize costs and maximize results, used also for natural extracted products like artemisinin.(7) New genomic technologies as modern molecular-biological methods are used today to develop new generation of phyto-pharmaceuticals with synergistic effects.(8) Advances in biotechnology and molecular science have made the interface between ethnobotanical approach and drug discovery increasingly feasible to transform traditional medicines into modern drugs.(9)

In order to meet the requirements for drug approval, in the last decades clinical studies have become primarily an instrument of the pharmaceutical industry. Retrospective and prospective controlled cohort studies have been started in the field of phytopharmacoepidemiology, for example the mistletoe extracts therapy in cancer (10), more and more symposiums being dedicated to basic research and clinical practice for

[1]Corresponding author: Mihaela Stoia, Str. Ghe Barițiu, Nr. 3, Sibiu, România, E-mail: medmuncii@dspsibiu.ro, Tel: +40269 210071
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particular plant extracts. A systematic review of 78 randomized clinical trials regarding antioxidant supplements found no evidence to support antioxidant supplements for primary or secondary prevention, considering that these are medicinal products and should undergo sufficient evaluation before marketing.(11)

Although scientific evidence is insufficient, a close look at the ongoing research and investments into medicinal plants and plant-derived drugs points out that herbal therapeutics will continue to play an important role in human health.

METHODS

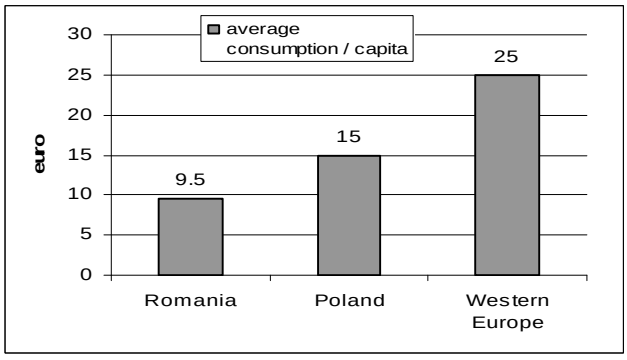
The following methods were used:

- Analysis and market research on herbal/dietary supplements using different sources of the last 10 years (mainly specialized publications, and press releases);
- Analysis of certain statistical indicators from official bulletins of the Ministry of Agriculture and Rural Development (MARD), and National Institute of Statistics. The following indicators were taken into account, for a period of 10 years (2001-2010): crop area and production of medicinal and aromatic plants; share of persons with low educational attainment; death rate of chronic diseases; life expectancy at age 65;
- Statistical processing: mathematical extrapolation for trend calculation by linear regression (regression coefficient b); correlation between variables by calculating the Pearson correlation coefficient r ($r = \pm 1$ means perfect correlation), at a significance level of risk $\alpha \leq 5\%$ and probability $P \geq 95\%$.

RESULTS AND DISCUSSIONS

The most significant growth of herbal supplements sales in Romania was from 65 million Euros in 2008 to 200 million Euros in 2010, reaching an average consumption per capita of 9.5 Euros, lower than other countries, as shown in figure no. 1.

Figure no. 1. Average consumption of herbal supplements per capita in Romania, compared with other European countries (Source: Bio Integra 2011)



Herbal/traditional products experienced high growth in 2010 in our country, and this is expected to lead to significant changes in consumption habits and lifestyle, which in turn will lead to increasing demand for more sophisticated herbal products.(12) Romania was included by IMS Health on the list of the 17 most important emerging pharmaceutical markets for 2011, due to its obvious growth potential via developing rural environment, and growing consumer knowledge and education.(12)

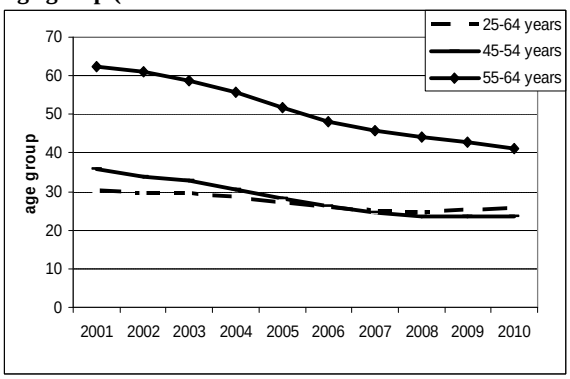
According to Joerg Gruenwald, Eastern Europe (Poland, Czech Republic, and Romania) contributed only 3% to the global supplement market in 2007, but the market is fast developing, especially in Romania and Ukraine.(13) Monika Stefanczyk, PMR's Head Pharmaceutical Market Analyst, forecasts a rate of growth of approximately 30% in 2013, when the consumption of dietary supplements in Romania is expected to exceed € 8 per capita per annum.(14) According to the same source, a survey carried out among companies present on the Romanian dietary supplement market shows that over half of the respondents (57%) were positive about the current situation on the dietary supplement market in Romania, but 18% were negative. Even sales have tripled in the period 2008-2010, however it remains an annual average consumption per capita lower than in countries such as Poland, Czech Republic, Slovakia, or Western Europe, but exceeding PMR estimated figure for 2013, according to Bio Integra.(15)

Analysis of parapharmaceuticals sales through pharmacies shows an important share of dietary supplements (50%) in 2005, according to PHARM Info. In 2008, top sales ranks antirheumatics and vitamins/minerals on first place by 42%, respectively 29% (Pharma Business).

The development of new products may change the share of top sales in the next years. In Romania, pharmaceutical industry and therapeutic areas market research is provided by Cegedim (a worldwide market research company), which still does not cover the phytopharmaceuticals market. Therefore, dietary supplements market size is difficult to assess, currently based only on individualized primary research of interested producing or distributing companies.

These studies are publicized mainly through press releases and Pharma business publications. In this respect, it would be useful to develop official reports in the future. Because approximately 80% of the raw material used by Romanian manufacturers comes from native flora (16), we have analyzed the official report on crop area and total production of medicinal and aromatic plants, which have significantly increased by 2010, showing a positive trend in harnessing the potential of ethnopharmacology.

Figure no. 2. Persons (%) with low educational attainment, by age group (Source: Romanian Statistical Yearbook 2010)

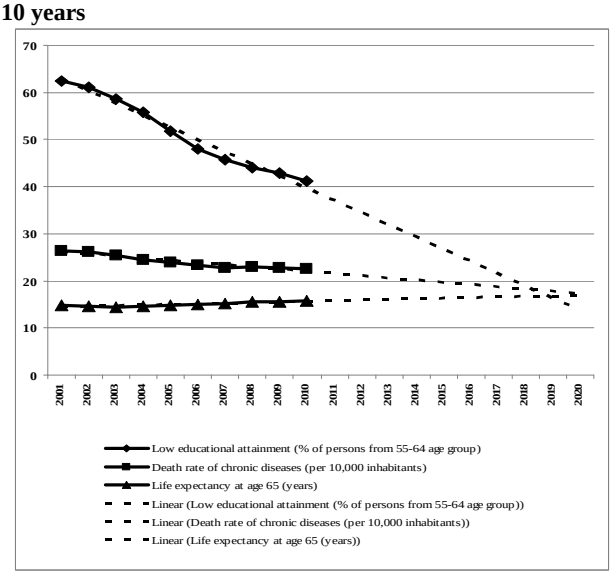


From the perspective of education, significant improvement occurs in persons with low educational attainment, during the last decade (figure no. 2).

The trend of the share of 55-64 aged persons with a low educational attainment over the next 10 years (2011-2020) is to decrease by 2.58% per year ($b = -2.58$, $r = -0.99$). The share of this indicator is expected to be 13.71% by 2020, respectively, a decrease of 48.69% compared to 2001 (figure no. 3).

Health indicators (death rate of chronic diseases, and life expectancy at age 65) have also improved in the last decade, as shown in figure no. 3.

Figure no. 3. Evolution of low educational attainment at 55-64 age group, death rate of chronic diseases, life expectancy at age 65 between 2001-2010, and trend forecast for the next 10 years



Trend of the death rate of chronic diseases (per $^{0}/_{000}$ inhabitants) over the next 10 years (2011-2020) is to decrease by $0.46^{0}/_{000}$ per year (b = -0.46; r = -0.95)**.** The share of this indicator is expected to be $17.38^{0}/_{000}$ by 2020, respectively, a decrease of $8.92^{0}/_{000}$ compared to 2001.

Trend of the life expectancy at age 65 over the next 10 years (2011-2020) is to increase by 0.13 years per year (b = 0.13; r = 0.90). This indicator is expected to be 16.92 years by 2020, respectively, an increase of 2.47 years compared to 2001.

We found significant correlations (±0.8→ ±0.9) between:

- % of 55-64 aged persons with a low educational attainment and death rate of chronic diseases (r = 0.98), respectively life expectancy at age 65 (r = -0.89);
- death rate of chronic diseases and life expectancy at age 65 (r = -0.80);
- herbal supplements consumption and % of 55-64 aged persons with low educational attainment (r = -0.91), respectively death rate of chronic diseases (r = -0.83), and life expectancy at age 65 (r = 0.94).

Modern approach of herbal history and philosophy should recognize traditional medicines as a way to develop potential future medicines in terms of safety, effectiveness, standards, and quality control. Perspectives involving food supplements and phytopharmaceuticals should include ethical advertising for correct and safe consumer use (16), and training / academic programs for practicing physicians and pharmacists.(17,18)

CONCLUSIONS

If 10 years ago herbal supplements market was almost insignificant in Romania, 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, but consumption per capita still remains lower than in other European countries.

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. Our results forecast a positive trend by 2020. Significant correlations (r = 0.8-0.9) were found between low educational attainment and health indicators, respectively, between these parameters and herbal supplements consumption, which is a scientific argument to our basic approach.

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