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Economical, Legal and Socio-Cultural Approaches to Geophagia

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Abstract. Geophagia, which is a phenomenon of earth-eating, was defined as the deliberate ingestion of soil or clay, and related materials by man and animals. Corresponding to recent findings in medicine it can target the neutralization of aflatoxins in food. Geophagia was considered as a very common feature of everyday life in Asian and African countries with deep ethnical and traditional roots. The aim of this research is to investigate the legal basis and to assess the socio – cultural basement and economical potential of the phenomenon of geophagia. As the result of the research some approaches to the adjustment of such phenomenon to the challenges of the current situation including industrial and anthropogenic influences were proposed. Consideration of the phenomenon of geophagia as a part of ethnomedicine with the necessity of governmental support of follow- up research and educational programs for people in communities, in which geophagia is widespread was proved.

1. Introduction

According to one of the definitions, geophagia which is a phenomenon of earth-eating is the deliberate ingestion of soil or clay, and related materials by man and animals [25]. In the historical retrospective the causes and consequences of geophagia providing an example of pregnant woman was disclosed by Hippocrates of Kos (460-377 BC). Later Ibn Sina (Avicenna) (980-1037) in his one of the most widely used medical textbooks made detailed assessment of geophagia [cited by 25]. Summarizing data, geophagia may be considered as an adaptive behavior [11; 22] related to a deficit of certain micro-elements rather than a disorder [14]. Besides elemental composition, clay mineralogy is a point of interest to explain mineral food supplements [24] due to possible detoxifying effects, neutralizing the negative effects of toxic substances and pathogenic micro-organisms through cation exchange and sorption. The clays, namely smectitic, significantly reduce the effects of mycotoxins in pet foods [8, 5]. Using of smectite by human allows to mitigate aflatoxin poisoning in food [e.g. 20; 23; 15]. Dioctahedral smectite, which is an active substance of “smecta” forms the polyvalent connections with mucus glycoproteins and increases the protection of the mucous membrane from the negative effect of H⁺, bile salts, intestinal microorganisms, their toxins and other irritants [22].

Phenomenon of geophagia is not well known for the European audience but it is well spread in Asian and African countries. The recent studies focused on clay mineralogy of the most common geophagic clays used in African communities have revealed the presence of smectite in the significant proportions



in it [6, 16, 17, 7]. Notwithstanding the widespread of geophagia among the population of Asian and African countries, the issues related to the socio- cultural basics of this phenomenon are still poor known. And as the result relevantly few countries have developed policies and regulations on geophagia so far. The aim of this research is to investigate the legal basis and to assess the socio – cultural basement and economical potential of the phenomenon of geophagia.

2. Analysis of different issues related to geophagia

2.1. Socio – cultural and medical basements of the phenomenon of geophagia

Based on the ethnographical research [4] the term ethnomedicine is considered as complimentary or alternative medicine that is a synonym for a broader understanding of the term traditional medicine. And this particular approach is currently widely believed. Under traditional medicine is usually understood [10] a set of methods and tools of treatment applied in the daily life. Throughout the history of its development, tradition medicine has experienced a different attitude up to the persecution of its carriers and adherents from the official authorities and scientists. But in the last decade of the XX century in official circles and the scientific community views on ethnomedicine have significantly changed. Caused by a number of socio-economic, environmental, physiological and other factors, scientists from different regions have focused on the survey on approaches of traditional medicine. Studies relating to its various aspects appeared in the scientific circus [9], among which is the interaction between people and nature for maintaining the vitality of the body, methods and tools of treatment of diseases, etc. Treatment of diseases is one of the most urgent and pressing needs of ethnic groups, this makes the study of the applied aspect of traditional medicine highly relevant.

Experience and knowledge built up over the years can be drawn on in modern conditions, when ethnic and scientific medicine find ways to interaction and mutual enrich. Interest in traditional medicine is caused first of all by borderless possibilities of use of centuries of practices of people in the field of medical knowledge. Various modern medicines and treatments are rooted in traditional medicine. Modern scientific medicine takes from the thousand-year experience of the people all the valuable and rational that has been accumulated there and discards all that can harm human health. And up to now traditional medicine retains its role in the life-support system of the population. In general the population's attitude to the traditional medicine varies from quiet encouragement and intuitive absorbing of this methods and practices to no-doubt and almost reverend perception of this idea.

Thus, official scientific circles tend to have a positive perception of the methods and practices of traditional medicine. But the point is the legal status of the ethnomedicine and government's overall attitude towards the traditional medicine itself. Basically, in both developing and developed countries various types of traditional medicine and medical practices have being increasingly used. Logically to assume that national policies and regulations on ethnomedicine and/ or traditional medicine have to ensure the safety, quality and efficiency of these therapies, products and approaches, and function as important steps towards integrative health care systems. However, according to the worldwide review [12] relatively few countries have developed policies and regulations on traditional medicine so far.

Obviously, that ethnomedicine is deeply engrossed into the cultural and spiritual life of the significant part of human communities using geophagia. For example the National Department of Arts, Culture, Science, and Technology funds consortium research projects into traditional medicines in South Africa regulates in general traditional healers, herbalists, chiropractors, homeopaths, osteopaths, and naturopaths under the Associated Health Service Professions Act of 1982, as amended [13]. This Act sets up a registration and licensing scheme for various professions. It is interesting to consider the decision of South African Parliament. In August 1998 it was decided to enlist the help of traditional healers in achieving major goals in primary health care. The National Department of Agriculture governs traditional medicines via the National Plant Genetic Resource Committee, of which a traditional healer is a member. The National Department of Health produced the National Drug Policy. Traditional medicines are included in the Drug Policy section of the Government's Reconstruction and Development Programme. The goals of the Traditional Medicines Programme of the Department of

Pharmacology, University of Cape Town are to promote the use of safe, effective, and high-quality essential traditional medicines; promote the documentation and scientific validation of traditional medicines; contribute to primary health care by providing appropriate information to traditional healers and other health professionals; support industrial development in this sector; contribute to the training of traditional healers. But this act does not cover the geophagia based on the factual difference between geophagia and traditional medicine as such.

Traditional medicine implies the need to seek advice and help from therapists, healers, warlocks in case of disease, life physical and emotional problems. Geophagia is deep – rooted long – standing tradition based on the intuitive awareness of the benefits of clay. Most probably this tradition is based on the intuitive knowledge of the positive effect of the clay on the human body. In fact in this case close link and interaction between traditional conscience, somatic system of people and chemical reactions in the human organism affected by geophagic clay takes place. In this case efforts should be focused on explanation and popularization of geophagia properties. In general the approach to the geophagia should be less intuitive but more scientifically explained. The deep year-by-year tradition should be transferred to the medical research on the basis of the great traditional experience. A necessity of the follow-up integrated study in the collaboration with scientifically proved medicine exists in order to disclose and confirm the capacity to use the clay in medical reasons. Medical research and follow-up popularization of the scientific approach to the intuitive tradition of geophagia is one of the top priorities. As such taking into consideration that geophagia is deep – rooted long – standing tradition, the educational program should take place with regard to the popularization of useful properties of the clay.

2.2. Education issues related to geophagia

In this case the question arises as to financing of such educational programs. There is the scope for Governments to commit themselves take additional steps and foster scientific approaches in collaboration with scientists, medical chemists and pharmacists. Actually the Governments should assume their responsibility in supervision and financing firstly these medical investigations and secondly educational programs. Speaking about the financing of research and educational programs the Governments should transfer the competence in respect of the financing those programs to private business or try various approaches to developing social responsibilities of business in the field of popularization of geophagia and concentration of financial resources on different level of the budgetary system for financial support of the educational programs.

Secondly it is dramatically important to pay attention to the fact that special ecological protection regime has to be granted to the places of geophagic clay localizations. The reality of our life is the following: domestic waste is dumped in certain areas without being treated, household and municipal waste is piped into the ground and stay there. Unutilized plastic waste is accumulated in the immediate area of geophagic clay and destroys the ecological balance of the territory. Little can be done to overcome that tendency in the short - term run, investments for cleaning off the trash piles and follow-up regulation of waste disposal are needed. In general, turnover of plastic at the legislative level is regulated approximately in 40 countries. [18, 19, 3].

2.3. Legal and economical issues related to geophagia

Based on the research performed with regard to the necessity of monitoring the ecological status of geophagic places it is absolutely essential to arise the question of funding such works. One the major source of the household waste is plastic packages. Summarizing data [e.g. 1], upon the analyses of the mechanisms used in different countries various approaches could be realized in order to resolve this problem or to mitigate the effects of it. For example, in the Great Britain and Germany special fees applied at the moment of sale on each disposable package is established (interesting to note that funds from these fees are allocated not for the solution of ecological tasks, but for support of social public organizations). Taxes on plastic packages are implemented in Ireland, Denmark, Latvia, and Israel. In California (USA) distribution of all plastic disposable packages, except for into what foodstuff is packed in the factory way is strictly forbidden. In France within Ecological strategy - 2020 the restriction on

sale of plastic bags less than 10 liters and a subtlety less than 5 microns works. Tighter restrictions work in Italy, Australia, Egypt, Argentina, Singapore, and Tanzania where any use of disposable packages in retail is forbidden. By other way regulation of a turnover of plastic in Kenya, Tunisia, Mauritania, Eritrea, Rwanda and Ethiopia has gone. The states did not introduce the special taxes or fees connected with the sales of plastic packaging, and have preferred to realize the most stringent scenario by introduction of punishment in the form of a large penalty up to imprisonment for a period of up to 4 years, for production and distribution of disposable packages. Besides that it is necessary to influence behavioral model of the customer, the state support and stimulation of technologies for processing of the used packing and also stimulation of retailers to the voluntary agreement for processing of waste is also important. The point is in not only the recycling of plastic and other household solid waste, but in working out the approach to the collecting funds for effective waste management.

The comparative analysis of approaches has shown that the most efficient and productive mechanism of expansion of responsibility is state and business cooperation [2]. This approach allows the government to reduce administrative burden in the area. Co-operation in the infrastructure creation allows to carry out materially and to control effectively actual waste management. It is hard to underestimate the role of state and business co-operation in solving problems of ecologically adverse territories. Identification and implementation of additional opportunities provided by private sector of economy is vitally necessary in those cases, when the government is not capable to cope with a problem effectively. From one hand, business helps to find funds for solving problems for which there is not enough money on the state or regional level. From other hand, there is an outstanding opportunity for business to strengthen the image demonstrating the policy of social responsibility.

3. Conclusions

The use of earthy material for geophagia is mostly historically and traditionally motivated, corresponding to recent findings in clay mineralogy the geophagic clays target neutralization of aflatoxins in food.

According to our opinion, the traditional intuitive using of clays should be considered as ethno medicine which is an important and natural part of the life-support system of population. In general the approach to the geophagia despite the intuitive roots should be more scientifically explained.

A necessity of the follow-up integrated study in the collaboration with scientifically proved medicine exists in order to disclose and confirm the capacity to use the clay in medical reasons.

Speaking about the financing of research and educational programs the Governments should transfer the competence in respect of the financing those programs to private business or try various approaches to developing social responsibilities of business in the field of popularization of geophagia and concentration of financial resources on different level of the budgetary system for financial support of the educational programs.

Also it is dramatically important to pay attention to the fact that special ecological protection regime has to be granted to the places of geophagic clay localizations.

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