

## PHYTOTHERAPY AND APITHERAPY IN ATTENTION OF THE PRESENT DAY TEACHER OF BIOLOGY

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### Abstract

The role of medicinal plants and apicultural products (honey, pollen, royal jelly, propolis) for the cure of various disorders it has been known since ancient times. In our days, alongside of other biotherapies, phytotherapy and apitherapy are maintaining their importance. In comparison with chemotherapeutical drugs, which can lead to habituation or cause another disorder, phytotherapy and apitherapy constitute natural remedies for treatment, with no adverse or harmful secondary effects, and which do not involve habituation. The analysis of the existing content of the optional discipline "Education for health", elaborated for 1st to 12th grades shows that there are not included themes related to the use of medicinal plants and apicultural products for therapy. In this context, we consider that for promoting health and imprinting a healthy life style is needed to inform the pupils about the existence of possibilities for curing disorders, others than those offered by the modern medicine. The aim of this paper is to show how the biology teacher can transmit primary knowledge of phytotherapy and apitherapy within the school activities, during the 9th grade, in the same time with notions of angiosperms plants, during the 11th grade, and primary notions of hygiene and pathology specific to various systems in human body, by elaborating personal optional disciplines, and also within extracurricular activities.

**Key words:** phytotherapy, apitherapy, teacher of biology, school activities, extracurricular activities

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Man, from the very beginning of its existence, has searched for simple solutions in order to solve health problems, resorting to its closest and most faithful friend – nature. "Nature itself was the first pharmacy" (Jarvis D.C., 1989).

Therefore, from ancient times, man used plants and apicultural plants both for feeding and therapeutic purposes.

Even though at the beginning of the 20<sup>th</sup> century, once with the development of chemical and pharmaceutical industry, there can be observed a decrease of the interest regarding the use of medicinal plants and apicultural products for therapeutic purposes, nowadays, phytotherapy and apitherapy are reconsidered. It is demonstrated once again that "man cannot live without nature that nature itself has offered man the remedy of the disease the latter has to discover" (Păunescu, T. et al., 1988).

Phytotherapy (Fr. *phytothérapie*, cf. Ngr. *phyton* – plant, *therapeia* – treatment) is a therapeutic method which uses the medicinal plants for therapeutic purposes. As compared to the allopathic medicine, which recommends only substances extracted from plants, phytotherapy uses plants in the form of total extracts. With the help of preparations from medicinal plants can be treated easy, functional diseases or incipient phases of the diseases. In the case of chronic diseases,

phytotherapy has an adjuvant, auxiliary role. In our etnoiatry there are used approximately 870 species of plants, among which approximately 200 are studied from a chemical and pharma-dynamic perspective, and 100 plants are currently used in self-treatments (Grigorescu E., Ciulei I., Stănescu U., 1986).

Another method of natural treatment is apitherapy (Fr. *apithérapie*, cf. Lat. *apis* – bee, Ngr. *therapeia* – treatment). It is based on the use of beehive products (honey, pollen, wax, royal jelly, propolis and bee venom) in preventing and treating various diseases, as well as in increasing the resistance of the human body (\*\*\*Apimondia, 1989, 1990).

Nowadays, in therapeutics it is considered that "all methods existent available to man should be learned, known and applied depending on their indications, limits and possibilities for man's state of wellness". Therefore, natural therapies should complete the conquests of allopathic medicine, a symbiosis should be made between phytotherapy, apitherapy, chemotherapy and other natural therapies, considering the values and risks of each therapy method (Chirilă P. și colab., 1987).

The biology teacher has an important role in educating the school population in the process of health promotion and formation of a healthy life style, both by transmitting some knowledge of

education for health and by cultivating the respect for the personal life, the individual's own health and the other's health.

Analyzing the current content of the optional discipline Education for Health elaborated by the Ministry of Education and Research, in modular variant for 1<sup>st</sup>-12<sup>th</sup> grades, there can be observed that there are not included themes related to using plants and apicultural products in therapeutic purposes. Medicinal plants are studied in kindergarten within the optional discipline mentioned above with the condition that the pre-school teacher should include this theme in the curricula because at the level of pre-school education the curricula is elaborated by the teaching staff.

Considering that it is necessary that students from the 5<sup>th</sup>-12<sup>th</sup> grades should be informed on the existence of other possibilities of treating the diseases, besides the ones used by allopathic medicine, and that their information realized in kindergarten is not sufficient for promoting health, we proposed that the main goal of the paper should be emphasizing the possibilities of transmitting some basic knowledge of phytotherapy and apitherapy within the school and out-of-school activities, in secondary and high-school. For this research we have considered the following objectives:

- Identifying some biology themes studied in high-school within which basic elements of phytotherapy and apitherapy could be transmitted;
- Underlining themes which can be treated by teachers within optional disciplines in order for the students to assimilate several notions of phytotherapy and apitherapy and to develop skills regarding the use of medicinal plants and apicultural products for therapeutic purposes;
- Underlining out-of-school activities which are to help students assimilate knowledge of phytotherapy.

## MATERIAL AND METHOD

In specialty treatises and books (phytotherapy, apitherapy, api-phyto-therapy, biotherapy, plant medicine) appeared beginning with the last decades of the 20<sup>th</sup> century, numerous scientists have emphasized the amazing effects of medicinal plants and beehive products, offering at the same time scientific arguments, based on their researches, in favor of using these biotherapies.

In comparison with chemotherapeutical drugs, which can lead to habituation or cause another disorder, phytotherapy and apitherapy constitute natural remedies for treatment, with no

adverse or harmful secondary effects, and which does not involve habituation.

Analyzing the current content of the Biology textbooks programs, used in secondary school and high-school, and the specialty literature on phytotherapy and apitherapy, we have identified certain school years in which the teacher can organize extra-school activities or elaborate optional disciplines. Within these activities, students can assimilate basic knowledge of phytotherapy and apitherapy and develop practical skills regarding the use of medicinal plants and apicultural products in therapeutic purposes.

Likewise, we have identified in high-school textbooks several themes of vegetal biology and human anatomy within which the possibility of treating some diseases with the help of phytotherapy and apitherapy could be stressed.

## RESULTS AND DISCUSSIONS

Once with the systematic study of Biology in secondary-school, students can acquire scientific concepts specific of the various biological sciences.

Therefore, in the 5<sup>th</sup> grade, students learn for the first time the Plants kingdom, especially the plants met most often in every day life. Due to the fact that Biology is being studied only once a week, and according to the curriculum students should observe, within their practical papers, angiosperms with food, medicinal, ornamental, melliferous, textile, technical and wood importance, we estimate that it is difficult that the teacher should properly transmit notions of phytotherapy during school activities. Nevertheless, for the study of medicinal plants, the teacher of biology could organize a trip with the aim of observing and collecting species of medicinal plants existent in the geographical area the school is located.

It is advisable that, before organizing the trip, the teacher should visit the place where the extra-school activity is to take place, in order to know what medicinal plants are to be found in the area and whether they are in blossom. On the field, the teacher can organize the activity in group of students, on the basis of a work chart, indicating every group of students what group of plants should be observed. It can be observed the same species of plants or different species. The group can be made up of 4 to 6 students, among whom one of them will be designated the leader of the group who is to present the results of the group at the end of the activity, another will be the drawer of the group, who is to draw the plants observed and another one will transport the collected plants, because each group is to realize a herbarium.

In the observation record, students should mention: a) the place the plant lives (in the shade, in the sun, bushes etc.); b) the folk denomination of the plant; c) the type of plant: wooden (tree, bush), herbal etc.; d) description of the root (for herbal plants); e) description of the stem; f) description of the leaf (form, type of nervure etc.); g) description of the inflorescence, if the case (how the flowers are placed and their color); h) description of the flora: corolla – the color and number of petals, the calyx – the color and number of sepals, androecium – number of stamina, gynaecium – number of pistils; i) description of the fruit, if the case (color).

The observation record should accompany each pressed plant.

The group activity is to be continued in school, in the laboratory, where the students will

determine the observed plants under the teacher's guidance and with the materials offered by him (guides, atlases). On the basis of different materials offered by the teacher (extracts from phytotherapy books) or following their own research, each group will discover the therapeutic indications of the different parts of the plant observed (*tab. 1*) and the way of obtaining the best-known phytotherapeutic preparations (infusion, decoction, maceration, syrup).

Therefore, there can be studied: the chamomile, the lime, the mint, the milfoil, the hardhay, the shepherd's purse, the hiprose, the underbrush, the plantain, the horse tail, the eldertree, the nettle, the dandelion, the crawfoot, the nut tree, the cherry tree, the pine tree etc.

Table 1

#### Medicinal plants used for therapeutic purposes

(after Grigorescu, E., Ciulei, I., Stănescu, I., 1986; Chirilă, P. et al., 1987; Geiculescu, V. T., 1986)

Plant	The part of plant used	Phyto-therapeutic indications
folk/ scientific denomination		
The chamomile <i>Matricaria chamomilla</i>	inflorescence	<ul style="list-style-type: none"> <li>- inflammatory states of the gastric mucous membrane</li> <li>- ulcer</li> <li>- colitis</li> <li>- affections of the higher respiratory channels</li> <li>- burns</li> </ul>
The lime <i>Tilia tomentosa</i> ( <i>Tilia argentea</i> ) – white lime, silver lime <i>Tilia cordata</i> ( <i>Tilia silvestris</i> ) – red lime, forest lime <i>Tilia platyphyllos</i> – big lime, smelling lime	inflorescence with bracteas, inflorescence without bracteas	<ul style="list-style-type: none"> <li>- influenza, cold</li> <li>- hyper excitability</li> <li>- anxiety</li> <li>- emotiveness</li> <li>- insomnia</li> <li>- rheumatism</li> </ul>
The mint, the garden mint, the good mint <i>Mentha piperita</i>	leaf	<ul style="list-style-type: none"> <li>- gastritis</li> <li>- biliary calculi</li> <li>- chronic affections of the pancreases</li> <li>- affections of the nasal mucous membrane and respiratory channels</li> </ul>
The hardhay <i>Hypericum perforatum</i>	the end parts of the blossom or in bloom plant	<ul style="list-style-type: none"> <li>- gastric ulcer</li> <li>- gastritis</li> <li>- burns</li> <li>- depressions</li> </ul>
The milfoil <i>Achillea millefolium</i>	inflorescences	<ul style="list-style-type: none"> <li>- burns</li> <li>- chronic enterocolitis</li> </ul>
The hiprose <i>Rosa canina</i>	False fruct	<ul style="list-style-type: none"> <li>- arthritis</li> <li>- atherosclerosis</li> </ul>
The eldertree <i>Sambucus nigra</i>	flower	<ul style="list-style-type: none"> <li>- stimulates the body resistance</li> <li>- rheumatism</li> <li>- respiratory problems</li> <li>- cold</li> <li>- burns</li> </ul>
	leaf	<ul style="list-style-type: none"> <li>- burns</li> </ul>
The crawfoot <i>Calendula officinalis</i>	inflorescence	<ul style="list-style-type: none"> <li>- gastro-duodenal ulcer</li> <li>- burns</li> <li>- chilblains</li> <li>- wound</li> <li>- cholecystitis</li> </ul>

The trip can be organized in May and June, both in the 5<sup>th</sup> and the 11<sup>th</sup> grade, in order to observe medicinal plants and the summing up of students' knowledge about plants' anatomy.

The teacher should pay attention not only to assimilation of theoretical notions of phytotherapy, but also to the development of practical skills, such as: the skill of gathering medicinal plants from unpolluted areas when they contain a maximum of active ingredients, without destroying the nature, of correctly preparing the hydric extracts, of correctly using honey for sweetening the tea after its temperature is under 40°C and of correctly using the propolis tincture. If students show interest in using medicinal plants and apicultural products for treating various diseases, and the school is located in the rural area, the teacher of biology can propose an optional for the 5<sup>th</sup> or the 11<sup>th</sup> grade, entitled "The medicinal plants and apicultural products in the support of man's health". The optional can treat themes like: Medicinal plants and related species without therapeutic properties; The importance of medicinal plants for man's health – the therapeutic recommendations of the most known medicinal plants from the geographical area school is located in; Optimal conditions of gathering medicinal plants (the time and place of harvesting); The correct preparation of hydric extracts; Honey – food and medicine; The therapeutic application of propolis pollen and royal jelly.

In high-school, due to the fact that by the study of biology it is aimed the development of the scientific concepts learned in secondary-school at

the specialization "Sciences of nature", there can be emphasized the importance of medicinal plants in treating various diseases, once with the study of angiosperms.

In the 11<sup>th</sup> grade, once with the study of basic notions of hygiene and pathology specific of various machines apparatuses and systems of the human body, students can learn basic elements of phytotherapy and apitherapy. The notions of phytotherapy and apitherapy can be presented by:

a) the teacher, at the end of lesson, under the form of "it is good to know";

b) pupils, if they have been asked to elaborate together or in groups, in the classroom, by independent study, a material based on information from various sources (brochures, journals, books) offered by the teacher, or materials selected by themselves from the Internet;

c) pupils, if they have been asked to elaborate, individually or in groups, a summary, as homework. In the case when the presentation of notions is done by pupils, it is necessary to assure their fixation by elaboration of a cluster or table, together by the teacher and pupils, on the black (or white) board, mentioning the medicinal plant, and therapeutic indications (*tab. 2*).

At the same time, for 11<sup>th</sup> graders there can be elaborated an optional entitled "Phytotherapy and apitherapy in human pathology", in order for them to consolidate the information on the diseases of the human body and their treating by using natural therapies.

Table 2

**Using medicinal plants and bee products in therapeutic purposes**  
(after Geiculescu, V. T., 1986)

Diseases	Phytotherapy	Apitherapy
1. Diseases of the digestive system		
a) simple stomatitis	- <i>Matricaria chamomilla</i> – infusion, 3-4 teaspoons in a pitcher of water; to gargle 3-4 times a day;	- propolis mouth wash
b) acute and chronic pharyngitis	- <i>Matricaria chamomilla</i> – infusion, 3-4 teaspoons in a pitcher of water; to gargle 3-4 times a day; - <i>Origanum vulgare</i> – infusion 1 teaspoon in a pitcher of water (200 ml); to gargle several times a day;	- crystallized honey kept in mouth - propolis, alcoholic solution 5%, aerosols or gargles;
c) hyperacid gastritis and gastro-duodenal ulcer	- <i>Flores Calendulae</i> – infusion, 2 teaspoons in a pitcher of water; to be drunk before meals; - <i>Folium Rubi idaei</i> – infusion, 1 teaspoon in a pitcher of water; 2-3 pitchers a day to be drunk;	- propolis tincture 20%; 40 drops in warm milk, before breakfast;
d) chronic enterocolitis	- <i>Flores Chamomillae</i> – infusion, 1-2 teaspoons in a pitcher of water; to be drunk during the day; - <i>Herba Hyperici</i> – infusion, 1 teaspoon in a pitcher of water; 2-3 pitchers a day to be drunk; - <i>Flores Millefolii</i> – infusion, 2 teaspoons in half a liter of water; to be drunk during the day;	- dried pollen – 20 g a day, before meals, the cure lasts for a month; - propolis – granulated or powder – 10-20 g per day;

e) cholecystitis	<ul style="list-style-type: none"> <li>- <i>Flores Calendulae</i> – infusion, 2 teaspoons in a pitcher of water (300 ml); to be drunk during the day, before meals;</li> <li>- <i>Taraxacum officinale</i> - infusion, 2 teaspoons in a pitcher of water (250 ml); 2-3 pitchers a day to be drunk after the main meals;</li> <li>- <i>Cichorium intybus</i> – decoction, 2 teaspoons of root in a pitcher of cold water (200 ml); then, to be boiled 5 minutes and to be drunk before main meals;</li> </ul>	-
2. nutrition and metabolic diseases		
a) saccharide diabetes	<ul style="list-style-type: none"> <li>- <i>Folium Mori</i> - infusion, 1-2 teaspoons in a pitcher of water; 2-3 pitchers a day to be drunk;</li> <li>- <i>Folium Juglandis</i> - infusion, 1 teaspoon in a pitcher of water; 2 pitchers a day to be drunk;</li> <li>- <i>Folium Urticae</i> - infusion, 1 teaspoon in a pitcher of water; 2 pitchers a day to be drunk;</li> </ul>	-
b) obesity	<ul style="list-style-type: none"> <li>- <i>Taraxacum officinale</i> - infusion, 2 teaspoons in a pitcher of water (250 ml); 2-3 pitchers a day to be drunk after the main meals;</li> <li>- <i>Sambucus nigra</i> - infusion, 1-2 teaspoons in a pitcher of water (200 ml); 2-3 pitchers a day to be drunk;</li> </ul>	-
3. Diseases of the visual analyzer		
a) conjunctivitis	- <i>Flores Chamomillae</i> - infusion, 2 teaspoons in a pitcher of water; to be used in the form of eye baths and compresses	- propolis, soluțiune 5-10%, in warm water, 3-5 drops in each eye;
4. Dermatologic diseases		
a) burns	<ul style="list-style-type: none"> <li>- <i>Flores Millefolii</i> - infusion, 2 teaspoons in a pitcher; to be used in the form of compresses;</li> <li>- <i>Flores Chamomillae</i> - infusion, 2 teaspoons in a pitcher; to be used in the form of local baths;</li> <li>- <i>Flores Calendulae</i> - infusion, 15-30 g in a liter; to be used in the form of local baths and cataplasms;</li> <li>- <i>Flores Sambuci</i> - infusion, 30-40 g in a liter; to be used in the form of local baths;</li> <li>- <i>Herba Hyperici Calendulae</i> - infusion, 30-40 g in a liter; to be used in the form of local baths and cataplasms;</li> </ul>	<ul style="list-style-type: none"> <li>- honey – the first aid is to salve the burnt skin twice a day after washing it with the mentioned infusions;</li> <li>- propolis spray – bee product</li> <li>- propolis unguent – 20-30% (bee product)</li> </ul>
b) chilblains	- <i>Flores Calendulae</i> - infusion, 15-20 g in a liter; to be used in the form of local baths and cataplasms;	- propolis ointment – 20-30% (bee product)
5. Infectious and catching diseases		
a) catarrh	<ul style="list-style-type: none"> <li>- <i>Flores Sambuci</i> - infusion, 1-2 teaspoons in a pitcher of water; 3-4 pitchers a day to be drunk;</li> <li>- <i>Flores Tiliae</i> - infusion, 1-2 teaspoons in a pitcher of water; 2-3 pitchers a day to be drunk;</li> </ul>	-
b) influenza	<ul style="list-style-type: none"> <li>- <i>Flores Sambuci</i> - infusion, 1-2 teaspoons in a pitcher of water; 3-4 pitchers a day to be drunk;</li> <li>- <i>Flores Tiliae</i> - infusion, 1-2 teaspoons in a pitcher of water; 2-3 pitchers a day to be drunk;</li> </ul>	- propolis tincture 20%; 20-30 drops to be taken twice a day an hour before meal;
c) adeno-viro-sis	<ul style="list-style-type: none"> <li>- <i>Flores Sambuci</i> - infusion, 1-2 teaspoons in a pitcher of water; 2-3 pitchers a day to be drunk;</li> <li>- <i>Matricaria chamomilla</i> – infusion, 1 teaspoon in a pitcher of water; 2-3 pitchers a day to be drunk or gargled;</li> </ul>	- propolis tincture 20%; 20-30 drops to be taken twice or three times a day with an hour before meals

## CONCLUSIONS

Due to the importance of natural therapies nowadays, it is necessary that the students should be informed about the existence of other possibilities of treating the diseases of the human body, among those offered by allopathic medicine.

For promoting health and a healthy life-style, the teacher of biology can transmit basic notions of phytotherapy and apitherapy in order to develop in students practical skills regarding the

use of medicinal plants and bee products for therapeutic purposes as follows:

a) In secondary-school, within: the school activity by elaborating an optional in the 5<sup>th</sup> grade; extra-school activity by organizing a trip in the 5<sup>th</sup> grade;

b) In high-school, within: *school activity*, by: developing scientific concepts of vegetal biology in the 9<sup>th</sup> grade and human pathology in the 11<sup>th</sup> grade; elaborating an optional discipline in the 9<sup>th</sup> or the 11<sup>th</sup> grade; *an extra-school activity*, by organizing a trip in the 9<sup>th</sup> grade.

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