

ANTANAS GENDROLIS

PROPOLIS

NATURAL MEDICINE

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TABLE OF CONTENTS

PREFACE.....	9
APITHERAPY	15

CHAPTER 1

HISTORICAL INFORMATION ABOUT PROPOLIS	25
PHYSICAL PROPERTIES OF PROPOLIS	31
CHEMICAL PROPERTIES OF PROPOLIS	33
STANDARDISATION OF PROPOLIS	45

CHAPTER 2

PHARMACOLOGICAL PROPERTIES OF PROPOLIS	54
PROPOLIS IN PREVENTION AND TREATMENT PRACTICE.....	97
PROPOLIS AND INFECTIOUS DISEASES	99
PROPOLIS AND CARDIOVASCULAR DISEASES.....	120
PROPOLIS AND ONCOLOGICAL DISEASES.....	155
PROPOLIS AND GASTROINTESTINAL DISEASES	161
PROPOLIS AND SURGICAL DISEASES	167
PROPOLIS AND NEURODEGENERATIVE DISEASES	176
PROPOLIS AND GYNAECOLOGICAL DISEASES.....	180
PROPOLIS AND UROLOGIC DISEASES	185
PROPOLIS AND SKIN DISEASES	188
PROPOLIS AND EAR, NOSE AND THROAT DISEASES	199

PROPOLIS AND EYE DISEASES.....	214
PROPOLIS AND DENTAL DISEASES	226
PROPOLIS AND PAEDIATRIC DISEASES.....	230
PROPOLIS, GERIATRIC DISEASES AND LIFE SPAN..	233

CHAPTER 3

PROPOLIS IN HOMEOPATHY	255
PROPOLIS IN VETERINARY PRACTICE.....	261
PROPOLIS IN COSMETICS.....	267
WHEN IT IS NOT ADVISABLE TO USE PROPOLIS	277
About author	279
Propolis preparations	282
Preparations with propolis currently manufactured in Lithuania	284
List of References	288

ABBREVIATIONS

LR – free radicals

PEE – ethanol extract of propolis PVT –
propolis aqueous solution KMI – Kaunas
Medical Institute KMA – Kaunas Medical

Academy KMU – Kaunas University of
Medicine KMUH – Kaunas Medical

University Hospital MPA – meat peptone
agar

KMU FF VTFOK – Department of Medication Technology and
Pharmaceutical Management of the Faculty of Pharmacy of the
KMU

ADF – adenotriphospate acid

CVD – cardiovascular disease

CAPE – caffeic acid phenethyl ester

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K

PREFACE

Nowdays, many of the world's scientists and doctors agree that despite significant effort and investments in the science and practice of medicine, research achievements of the human species and their diseases, the pharmaceutical industry development in creating new medications and means of diagnostics, and technologies for improvement of treatment, there is no positive outcome. Despite increasing funding of patient treatment, many people do not feel healthy, millions die as a consequence of cancer and cardiovascular disease (CVD) and chronic non-infectious diseases. There are many cases where doctors are helpless. There are mysterious links of the human body with spiritual energies, and science itself still has no answers to many questions. Therefore, many of the elderly in particular, and a big number of young people cannot imagine their daily life without pills.

According to the information of *Lietuvos Sveikata* (2015, No. 4, 6) every year in Europe about 200 thousand people die from the side effects of drugs, i.e. seven times more than in car accidents. Moreover, this is the fifth largest cause of death in hospitals. Elderly people often take several medicines at the same time, therefore, side effects of drugs on them are even more dangerous because of drug interactions. This problem becomes acute for the constantly aging population.

The famous academician of cardiac surgery N. Amosov once said that doctors can cure many diseases, but they cannot give health to people, and that health requires old fashioned

effort which cannot be replaced with anything else. Health is not a product that you can buy.

I think we can prevent many diseases ourselves. Health really does not need large financial investment. No magic supplements or expensive new technologies or wellness treatments can help prevent diseases. In accordance with the WHO statistics, as much as 51.5 per cent of human health depends on lifestyle. This number is a glaring reminder that it is time to be more concerned about our health. Therefore, health should be seen as the biggest spiritual and economic value, and concern for its preservation and enhancement has to become not only a priority of state social policy, but an individual initiative for each and every person. After all, good health is our biggest asset, even though we often admit it only in the most difficult moments of life.

The synthesis of the modern and natural medicine can help address this problem.

Searching for a way out of the situation, the European health policy document of the World Health Organization (WHO) *Health for All in the Twenty-First Century* states that the aim of all European governments is health for everyone. To achieve this, doctors and other medical practitioners need to combine modern medical knowledge with knowledge of alternative medicine and other treatment methods, laying the foundations for complex medicine.

Finally, the world has understood that modern treatment methods and the latest technology is not sufficient to cure people and that the most effective chemical drugs may not reduce the number of patients without the help of alternative medicine.

For thousands of years, people have known about the

healing plant properties, bee products and other natural remedies. However, the rapid development of chemical pharmaceutical industry underestimates the knowledge of many people about apitherapy – treatment with bee products. Nevertheless, the use of natural remedies has passed the test of time and proved its effectiveness.

Although today these treatment and wellness methods have to overcome ignorance, negative attitudes, disbelief in these substances, apitherapy is not quite forgotten, and many people prefer natural treatments in case of minor ailments. Why the trust of people in natural medicines is growing every day, despite of a huge choice of medicines in pharmacies? Why are people increasingly relying on the healing plant properties and bee products? Maybe because healing properties of these substances are embedded in our genetic memory and protect us from the constant increase in the human body's resistance to some chemical drugs, growing incidence of allergies to drugs and their side effects on the body. Therefore, patients increasingly prefer friendly, integrated and reliable treatments.

Mankind has long been engaged in the consumption of bee products (apitherapy) in order to maintain a good health and treat a variety of diseases and yet it is not a scientifically recognized branch of medicine

Understandably, alternative methods of treatment such as apitherapy, herbal medicine or homeopathy, cannot change much and will not be a miracle cure in a difficult medical condition, but they help to support the body making it more resistant, healing better after surgery, decreasing the risk of complications, etc.

Propolis stands out with its healing properties among other bee products. Since ancient times propolis was

considered as a mysterious substance having healing powers. Nowadays, researchers recognize that from among apitherapy products propolis is the most effective, and its applications for treatment and prevention of various diseases are now widely studied. In Lithuania, propolis liquid extract has been certified as a non-prescription medicine.

Scientific investigations of propolis have highly intensified over the last 20 years. In particular, notable is the recent focus on the investigation of the activity of propolis is notable in the treatment of cancer, diabetes, cardiovascular and other diseases. The scientific works have proven its efficiency in treating a variety of chronic and autoimmune diseases. The list of diseases that can be treated with the help of propolis, is constantly expanding. Finally, scientists realized that it is necessary to know better and use wider this gift of the Mother Nature.

Propolis monograph was published in Lithuania for the first time in 2010. My book reached its target – people received modern, scientifically-based information. I am grateful to my destiny of having the opportunity to help people looking for information about this amazing product of nature and its wonderful properties. But, since the edition of Propolis monograph has been sold out, and the interest in it is still high, it was decided to issue a new revised and supplemented version of the book – *Propolis – a Medicine from the Hive*.

This study contains numerous references to various works of Lithuanian and global authors, discussing results of research and effects of propolis in disease treatment. This indicates that propolis preparations can be a powerful weapon that can defend against disease and poor well-being. This scientifically proven truth is important not only because

propolis is an effective remedy – it indicates that in some cases it is possible to receive treatment without expensive drugs and avoiding their side effects.

Therefore, apitherapy can successfully complement modern basic medical approaches. This book is an opportunity to contribute to the preservation of ailing health of the human body with natural apitherapy measures. I hope that readers will find information still unknown to them about apitherapy, its evolution, propolis, medications developed and manufactured in Lithuania, as well as their potential preventive and therapeutic possibilities.

I would like to remind you that the information in this book cannot replace medical advice. It is a rather informative publication. However, before taking propolis products, you should consult a doctor.

Author

K

APITHERAPY

Apitherapy is as old as humanity itself. Its roots lie in ancient times, when man tasted honey for the first time, and felt its taste and health benefits. The experience was passed down from generation to generation. This knowledge was an intellectual property of a certain group of people. Traditional medicine has developed and preserved the natural prevention and treatment methods. After a long search, modern apitherapy – treatment with bee products – finally emerged.

For many centuries, old beekeepers knew the value of bee products better than scientists. Treatment effects of bee products have been studied much earlier, but results of studies have so far not been published. More information about research emerged in the Apimondia Congress only in 1937. However, the term of *apitherapy* was first proposed in 1965 at Apimondia Congress, when it was decided to set up an apitherapy sector to the federation, with a centre located in Bucharest. It still coordinates the research and production of preparations of bee products. Currently, all matters of beekeeping, starting with bee genetics and ending with bee product standardization, are under the spotlight of Apimondia. However, apitherapy has long stayed in the shadow of classic medicine. Currently, a new approach has developed in apitherapy, indicating that people using bee products can stay healthy for longer. President of the German Apitherapy Union Wilhelm Hemme says that apitherapy is a combination of new approaches, healthy lifestyle and use of bee products.

Emergence of apitherapy was accelerated by the works of Dr. Filip Tertsch (1844-1917), when he, being convinced on the benefits of bee venom, began treating rheumatism with bee stings in 1868.

In the recent years the media has often explored a variety of issues related to bee products as a remedy. One can increasingly often find a variety of drug forms (tablets, oils, extracts, etc.), food supplements and body care products, containing bee products on the world market, as well as in the Lithuanian pharmacies. Although, the apitherapy as a separate field of therapy is not recognized in Lithuania, special knowledge in this area can be valuable for specialists from various fields and for everyone concerned about their health. Interest in apitherapy is significant in Eastern and Western countries. Great experience in the field, and long-standing tradition is noted in Romania, France, Germany, Japan, Ukraine, Russia, China, and South American countries. Today, bee products are often becoming the subject of interest of scientists and the public. Treatment and health enhancement with bee products currently is experiencing a real comeback around the world.

Much attention to the apitherapy science and practice is paid by Ukrainian and Russian scientists. Academician of the National Pharmaceutical University in Kharkiv Prof. A. I. Tichonov brought together a panel of scientists over the last 50 years. More than 60 PhDs and doctors have been trained under his supervision. Their works are related with bee product research, development of new products and technologies from a bee products and biomedical research of these products.

China has scientific research institutes of bee products, along with specialized hospitals, where patients are treated

with apitherapy methods. Bashkiriya (Russian Federation) has established the State Beekeeping and Apitherapy Research Centre and carries out research under three programs. The main focus is dedicated to the production of biologically active preparations and food supplements of bee products and herbs, their clinical trials and use for treatment and prevention purposes. This centre has developed and produces more than 80 titles of various therapeutic and cosmetic products with bee products as their main ingredients.

Treatment with bee products, as well as herbs, has a long tradition in Lithuania. Our ancestors knew a lot of honey, propolis, and their positive and negative properties. Priest and beekeeping enthusiast Juozas Ambraziejus issued a *Book about Advanced Beekeeping of Priest J. Ambraziejus and Inventions of its Products* in 1908. He also issued a *Book on how to Use the Remedy against Rheumatism* (5). Prof. J. Krikščiūnas in its book *Beekeeping* issued in 1933 provided more information about the benefits of honey for human health.

Apitherapy started in Lithuania in 1966 when the experimental medical team was set up under the Kaunas beekeepers department of the Lithuanian Society of Gardeners, led by Dr. V. Stankevičius. It began to investigate the healing properties of bee products. At that time, a lot of emphasis on bee products was devoted not only by scientists but also clinicians such as J. Leipus, R. Leonavičius, K. Nešukaitienė, N. Vaivadienė, E. Jurgelevičienė, O. Kugrienė, L. Mackevičius, M. Gradauskienė, D. Pocienė, G. Kalinkienė, Č. Zvicevičius and others. Bee products and their use were described by Dr. E. Šimkūnaitė, associate professor of Kaunas University of Medicine E. Kanopka (6), and many others.

In the same year chief engineer of Sanitas pharmaceutical

factory in Kaunas T. Kavaliauskas created the technology for production of ointment of bee venom, Apitrit. This first preparation formulated in Lithuania was intended to treat joint diseases. It was tested by Dr. A. Baltuškevičius who worked in Kaunas Clinics at the time. Kaunas Sanitas pharmaceutical factory started producing ethanol extracts of propolis from propolis raw materials and created the tablet production technology from royal jelly.

In 1962 Prof. A. Lukoševičiūtė and Assoc. Prof. A. Eviltis began to investigate the influence of royal jelly in patients with heart disease. Doctor of Kaunas Clinics Dr. I. Paprečienė, under the supervision of Prof. Čepulis, investigated the effects of propolis and aloe vera on deep damage of tooth. She defended the candidate's dissertation on this topic in 1975. Prof. J. Ivaškevičienė, Assoc. Prof. V. Železniakienė, Dr. A. Baltuškevičius and Assoc. Prof. I. Vitkienė from Kaunas Institute of Physical Education studied the effects of bee products on the athletes' physical condition. Much attention was devoted to apitherapy by Dr. K. Kadziauskienė. Unfortunately, this energetic organizer full of excellent ideas has abandoned us. Under her management, her colleague A. Mačiokas defended his doctoral dissertation in which he examined biologically active substances of pollen. A bit later, A. Astrauskienė analysed curative properties of pollen.

As claimed by the former manager of Šiauliai hospital pharmacy B. Klupšienė, Šiauliai hospital started using propolis preparations in 1964 in surgery and therapy practice (pioneers – Dr. V. Grinkevičius, Dr. P. Doroševičius and Dr. J. Vasaitis). Surgical departments and the outpatient clinic used 30% and 50% propolis ointments produced by the hospital pharmacy for the treatment of necrotic wounds, boils, abscesses,

osteomyelitis, trophic ulcers and poorly healing wounds, as well as the burns of the first and second degrees. Propolis ointments clean the wounds, remove bad smell, pathogenic staphylococci, and accelerate wound granulation.

Ophthalmologist of Kaunas Clinics Prof. E. Doktoravičienė was the first Lithuanian to start using honey for some eye diseases and achieved positive results. Later, Dr. A. Valentinienė, S. Purtokienė, Assoc. Prof. J. Jankauskienė (currently a professor) studied using honey drops to treat eye diseases.

A lot of scientific and practical work was carried out by Assoc. Prof. A. Baltuškevičius. In 1982 he prepared and published methodological recommendations *Use of bee products in the medicine*. These supplemented recommendations were re-issued in 1990 under the name *Bee Products and Their Role in Human Health*. In 2003 he published a book with information about honey, pollen, bee bread, propolis, royal jelly, bee venom and wax (second edition in 2013).

Dr. K. Valiukienė together with Dr. A. Keturkienė prepared and in 2001 published a book *Application of Plants and Bee Products in Treatment of Joint Diseases*, Dr. D. Stasytytė-Bunevičienė in 2002 developed the material for family doctors *On Use of Some Bee Products in Everyday Practice*.

Bee products were described and promoted not only by doctors but also beekeepers, other professionals and scientists. Among them, is a long-time president of the Lithuanian Beekeepers Association Habil. Dr. A. Balžekas, Assoc. Prof. V. Salinka, Habil. Dr. M. Rauckis, Dr. V. Čeksterytė and others.

In 1988, I started working at the Department of

Medication Technology and Pharmacy Pharmacy Organization of Kaunas Medical Institute and was offered, among other topics, to research bee products as a raw material for the production of medicines and their standardization. This topic was suggested not by chance, as it was difficult to get raw materials for production of medicine in Soviet times, meanwhile, local raw materials were at hand. The choice of this topic was also determined by other factors:

- increasing resistance of microbes to antibiotics, their toxicity and allergic effects;
- high efficiency of some medicines made of bee products, their complex effect normalizing and correcting many of the body's functions;
- bee products not only directly affect the cause of disease (for example, infective agents), but also increase the body's immunity, activate its vital powers and thus help to overcome the disease;
- prices of medicines from bee products are affordable to patients, and medicines have almost no side effects.

The first bee products to be studied in-depth, was propolis. On 7 July 1992 the Lithuanian Pharmacopoeia Committee was set up and approved our monograph of Pharmacopoeia Propolis-FS-2 as a raw material for the production of medicines.

Later, we started working on Pharmacopoeia monographs of propolis liquid extract, solid propolis extract and propolis dry extract from standardized propolis raw materials, and their production technologies. As part of this work, it was possible to develop medications in many forms (ointments, creams, oils, suppositories, herb extracts with propolis). In the same year the sublingual propolis tablet

production technology was developed.

In 1994, the following Pharmacopoeia monographs were developed and approved: Propolis tincture FS-34–1994; Propolis dry extract FS–41–1994 and Solid propolis extract FS–50–1994. After good progress of these tasks, we started developing new pharmaceutical forms. In order to expedite this work, we had to have not only propolis and honey, but also reagents for analysis of propolis raw materials. However, the resources for materials and reagents in the Institute were very limited. Students of the Faculty of Pharmacy of Kaunas Institute of medicine joined work. They began preparing and defending thesis about bee products. First theses were defended by Sonata Trumbeckaitė – *Development of Technology of Ointment with Propolis Extract* and Daiva Krasauskaitė– Majienė *Development of Technology of Suppositories with Propolis Extract*. Both diploma holders later defended their doctoral thesis abroad and are now successful researchers and active apitherapists. Loreta Gestautaitė-Kubilienė in 1995 defended a thesis *Production of 30% Eye Drops with Honey in a Pharmacy*, and later, in 2001, wrote and defended a doctoral dissertation *Research and Quality Assessment of the Lithuanian Honey for Medicinal Production, and Technology of Honey Eye Drops and Its Properties*. Dr. L. Kubilienė created honey eye drops preparation named Oftalmelis. The clinical studies of the preparation have been performed in the Eye Clinic of Kaunas University of Medicine. The product is included into the Lithuanian Register of Medicinal Products. In 1998 the graduate Kristina Sadeckaite-Ramanauskiene (current professor) prepared thesis ‘The Development of Production Technology for the Foot Cream *Propote*’. In the final thesis ‘The Development and Research of Production Technology

of Honey with Pollen' the graduate Jurga Sabaliauskaite-Bernatoniene (current professor) suggested during the production of honey and pollen mixture to bring it nearer to the qualities of bee pollen according to the quantity of lactic acid because this product is easier absorbed, more nutritious and more stable.

During the previous 10 – 15 years the manufacture of various medical preparations that could be found at the chemist's has been started. However, as the European Union required the introduction of good medical manufacturing practice, many companies terminated the process since they could not meet the aforementioned requirements. Currently the preparations of bee products are produced by UAB '*Medicata filia*', UAB '*Valentis*', UAB '*Origmed*', UAB '*Acorus calamus*' in Lithuania. Whereas, honey mixtures with extracts of various medicinal herbs are produced by the company '*Apiflorus*'.

UAB '*Medicata Filia*' is one of the biggest manufacturer of natural biological raw materials, i.e. bee products and preparations of plant origin. Currently the company provides Lithuanian and the European Union chemists with more than 40 multi-purpose medicines that are made of pure bee products as well as ones with the medicinal herb extracts. It also provides medical products, curative cosmetics and preparations similar to food supplements. Every year the company together with the doctors – apitherapists create and provide to the market up to five new apitherapeutic products.

In 1991 the Lithuanian Apitherapy Association was established. The President of the association was doctor Povilas Rimkus, the Vice President doctor Kamelija Kadziauskiene. The first Board of the Lithuanian Apitherapy Association

consisted of doc. dr. Algirdas Baltuskevicius, doctor Lukas Mackevicius and the author of this article. In 1991 the Lithuanian Apitherapy Association organized two courses for the apitherapists, and in 1992 the international conference 'The Bee and the Human' was organized in Palanga. The guests from Latvia, Ukraine and Germany participated in this conference.

To summarise the achievements of our scientists and apitherapists, we can see a purposeful aspiration to develop various forms of drugs in order to make them widely available in medicine, i.e. satisfying the public demand for natural products, while offering an opportunity for apitherapists to choose them for treatment and prevention.

In recent years, fundamental and applied research of various scientists provided a new insight into the value of many natural and biologically active products, including the bee products. Active research of properties and effects on the human body the gear. Scientists find increasingly more arguments to support the correctness of empirical knowledge accumulated over thousands of years. Modern apitherapy, combining empirical knowledge and the latest scientific achievements, is entering a new stage of development. Bee products are becoming an important component in modern medical health care.

Stefan Stangaciu et. al. (2015), speaking at the 44th Apimondia Congress about the current situation and prospects of apitherapy in the world, noted that in accordance with their estimates, there are at least about 10,000 apitherapy professionals in the world. Many of them are beekeepers, and were locally and regionally trained to apply this methodology. There are also about 1,000 medical doctors who practice apitherapy in private practice or public clinics. Some countries, such as Korea,

Romania, Germany, France, Italy, Slovenia, Serbia, Hungary, Lithuania, Ecuador, United States, United Kingdom, Malaysia, China, Japan, Chile, Argentina, Brazil, Colombia and others, have their own state apitherapy associations and partnerships, which organize various events courses, symposia, congresses, conferences on a regular basis. In 2012, the International Federation of Apitherapy was founded in Germany. Its main goal was to build an international bridge between researchers, apitherapy professionals and beekeepers across the world. Apitherapy development prospects seem to be very good because of the latest communications technology developments (the Internet, *Google*, *Facebook*, *PubMed* etc.). It is important to mention that Apimondia (International Federation of Beekeepers' Associations) contributes to the development of apitherapy in all of organisations of other countries under its umbrella. Several times a year, this organization plans courses, seminars, round-table discussions, and invites recognized national and international experts of apitherapy. Thanks to such international events, scientific findings and relevant information about bee products and apitherapy can be applied in practice to help the millions of people who still suffer from many diseases around the world.

