



INTRODUCTION

Rogaška Medical Center, which has been pursuing the spa treatment tradition in Rogaška Slatina with the healing mineral water Donat for 400 years, combines the knowledge of top balneology specialists and the healing power of balneology on one side and healing effects of cannabinoids and the knowledge of experts in the field on the other. The knowledge, experience, the effect of balneotherapy procedures and the effect of cannabinoids laid the groundwork for the programmes in the following areas:

- insomnia,
- anxiety/depression,
- burnout,
- migraine,
- strengthening of the immune system.

The operators of the programmes are Tanja Bagar, Ph.D., Assistant Professor, and Željko Perdija, M.D., Assistant.

The programmes are carried out in cooperation with our own doctors specialists – balneologists: Nataša Nikolič, MD, Peter Kurila, MD, and mag. Irena Bajc, MD.

Tanja Bagar, Ph.D., Assistant Professor

Tanja Bagar, Ph.D., Assistant Professor, graduated in microbiology at the Biotechnical Faculty of the University of Ljubljana, and received the Prešeren Award for her bachelor thesis. She continued postgraduate studies at the Faculty of Medicine in Ljubljana, and received a Ph.D. in the field of biomedical sciences.

She is the CEO and Chairman of the Expert Council of the International Institute for Cannabinoids (ICANNA). She lectures microbiology and topics o ecoremediation at the Faculty Alma Mater Europaea and cooperates scientifically with the Austrian College of Health and Development. She is a member of the Pomurje Academy of Arts and Sciences, Slovenian Biochemical Society, the Slovenian Association of Psychologists and is one of the founders of the society for the preservation and protection of the environment. She has extensive research experience gained in laboratories at the National Institute of Chemistry, Biotechnical Faculty, the National Laboratory of Health, Environment and Food, the Topolšica Hospital, and abroad at the Institute for Microbiology and Genetics at the Georg-August University in Göttingen in Germany, and the Institute for Cell Biology of the University of Edinburgh.

Željko Perdija, M.D., Assistant

Željko Perdija, M.D., Assistant, after graduating from the Faculty of Medicine, acquired his licence and completed his post-graduate studies on ultrasound use in gastroenterology and hepatology in Zagreb, he specialized in internal medicine, passed all exams at the doctoral study programme at the Faculty of Medicine in Zagreb, a theoretical and practical test in flexible bronchoscopy and additional training at the University Medical Centre Ljubljana on digestive endoscopy.

He has completed an intensive four week e-education program Concepts of Cannabis Science I, carried out by Kenevir Research (Oregon, USA), and also follow-up program Concepts of Cannabis Science II. He is a member of the Governing Board and expert associate of the Institute (ICANNA). As a provider of medical examinations, he participates in the national program for early colorectal cancer detection, SVIT. He obtained habilitation as an assistant at the Faculty of Medicine in Maribor and gained experience as a lecturer by teaching at the Medical School in Maribor. He acquired his clinical experience at the University Medical Centre Maribor, University Clinic of Respiratory and Allergic Diseases Golnik, General Hospital Ptuj and with his work for health care centres.



Balneotherapy in Rogaška Medical Center

Balneotherapy is a set of water-based treatments, primarily using thermal water, and also medicinal mud, mineral water or sea water to promote relaxation, reduce pain in muscles and joints, improve circulation, stimulate the immune system and revitalize the body.

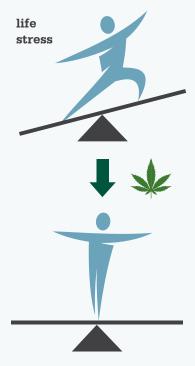
The balneotherapy services provided by Rogaška Medical Center include water drinking therapy, mineral baths, underwater massages, inhalation therapy and mud wraps. We are best known for our Donat source water drinking therapy. There are many natural mineral waters in the world, but Donat is unique in terms of its composition – it is refined with the highest content of magnesium and other important mineral substances. Its healing power alleviates and prevents many diseases and protects our health.



Is your endocannabinoid system depleted, too?

The endocannabinoid system or ECS is the primary endogenous signalling mechanism present in all vertebrates, including humans and pets. The role of ECS, in a nutshell, is to protect our body. When under stress, our body produces endocannabinoids, which regulate the functions of our body. With the 1990 discovery of the receptor that binds THC, began an active search for our own cannabinoids and receptors and the study of the signalling pathways that activate them. Since then, a variety of endocannabinoids and cannabinoid receptors have been discovered, with a variety of metabolic enzymes involved in their production. The set of receptors, endocannabinoids and enzymes is called the endocannabinoid system or our own cannabinoid system. Cannabinoids are actually very familiar to our body, as it produces them. In fact, under certain circumstances it produces a substance similar to THC called anandamide and under certain circumstances 2AG, which is a substance partially similar to CBD. Phytocannabinoids and endocannabinoids are so similar in 3D molecular structure that they bind to the same receptors and cause similar physiological reactions. Therefore, with the correct use of cannabinoids, we can support the functioning of the endocannabinoid system and improve health.

In modern society, people are constantly exposed to stressful situations (environmental toxins, endocrine disruptors, stress...), so their endocannabinoid system is activated many times a day, which can eventually lead to its exhaustion or dysfunction, similar to what we know from other biological systems in our body (hormonal, neurotransmitter). When ECS no longer functions properly, it means that the protection of our biochemical balance has been deactivated, and this can lead to various pathological conditions. An important factor in most chronic diseases is also an inadequate functioning of ECS. Cannabinoids act as "SOS molecules" that are activated when our internal balance is challenged for any reason whatsoever. Therefore, for example, the endocannabinoid system is activated when we endure a physical injury, when we encounter pathological microbes, and also when we are under stress, when we are running out of time, when we are angry in traffic or when something shakes us emotionally. Science has clearly shown that ECS serves as an overarching protective mechanism – it begins at the cellular level, through tissues, organs, to the functioning of our entire body and our emotions.



Cannabinoids and their significance for the organism

Cannabinoids are a heterogeneous group of compounds, whose main common trait is that they bind to cannabinoid receptors. These molecules belong to the chemical class of terpenophenols and are lipid molecules, meaning that they are fat soluble. In essence, they can be divided to three groups according to their source:

- endocannabinoids: they are formed in certain circumstances in the bodies of vertebrates, including humans;
- phytocannabinoids: they are present in plants (hemp, cannabis, purple coneflower, rue and certain species from the genus Apiaceae and Brassica);
- synthetic cannabinoids: they are made in chemical laboratories.

The best-known cannabinoid is THC or tetrahydrocannabinol. It is a phytocannabinoid that is present in large amounts in some types of hemp. It is one of more than 200 cannabinoids in the Cannabis sativa L. plant, and yet it is the most talked about and known because this very cannabinoid is responsible for the psychotropic effects of hemp. CBD is the predominant cannabinoid in industrial hemp. Cannabidiol is non-psychotropic and its consumption does not cause intoxication. CBD is well known in pharmacy and medicine, because there is no discomfort associated with psychoactive effects, but there is a broad range of positive effects. CBD acts differently in our body than THC and this difference is due to the activation of other receptors. CBD binds to receptors that are present throughout the body, not just in the central nervous system, so CBD has a wider spectrum of action. The highest density of receptors to which CBD binds is found on cells of the immune system. We are well familiar with the role of the immune system and know that it is involved in the development of many chronic diseases of the modern society and, of course, in response to infections. CBD also has antibacterial, antiemetic, anti-ischemic, analgesic, anti-inflammatory, neuroprotective, anti-anxiety, anti-proliferative, vasorelaxant effects, and the list goes on.

CBD has very interesting and diverse effects, which are the result of its binding or interaction with many receptors in our body, especially with cannabinoid receptors (CB1 and CB2), serotonin 5-HT1A, TRPV1, PPAR- γ and GPR55 receptors. Among other things, these are also involved in the biochemical pathways responsible for our responses to stress, the processing of environmental stimuli and our emotional responses. CBD also affects the metabolism of our own endocannabinoid, anandamide, and of adenosine, it has antioxidant and anti-inflammatory effects and is neuroprotective. Studies have shown that CBD changes the activity of brain regions involved in the control of emotional processes, such as the prefrontal cortex, hippocampus, amygdala and hypothalamus. CBD also reduces acute autonomic responses to stress and delayed emotional consequences through the activation of the 5-HT1A serotonin receptor. CBD has an extremely strong anti-inflammatory effect and reduces chronic inflammation in the body, and acts as an adaptogen for the entire immune and nervous system.

Cannabinoids and their quality in Rogaška Medical Center

Medicine and also pharmacy have already identified the potential of cannabinoids in maintaining health and treating various medical conditions. Cases and experience from abroad as well as considerable research, especially in the last decade, have identified the great efficiency of cannabinoids in various medical conditions. The endocannabinoid system regulates many processes in the body, in fact almost all of them, including the excitation of the central nervous system, the functioning of the immune system, perception of pain, inflammation. etc. Different pathways of cannabinoid intake have shown positive effects and also very good safety when using cannabinoid products. Cannabinoids also have a significant effect on the functioning of the mitochondria, these are the small power plants in our cells, and when they operate at peak efficiency, our body again has enough energy to regenerate and restore balance.

Since the Rogaška Medical Center keeps up with the latest findings, we have teamed up with experts in this field and designed programmes that, using procedures and preparations containing cannabinoids, support the functioning of the endocannabinoid system and thus lay the foundations for optimal health and well-being over the long term.

There are many hemp products in the market and it is very difficult to choose which ones have the right quality. We were very precise in the selection of products and chose those that meet the highest quality standards and are full spectrum.

So far, almost 2,000 substances have been discovered and identified in cannabis, of which more than 300 are cannabinoids and terpenoids. In addition to these two groups, hemp also contains many other substances – phenols, flavonoids, amino acids, proteins, vitamins, minerals, etc. Research has shown that many of these substances have unique effects on the human body, and the interesting fact is that their effects can change depending on other compounds in the mixture, which is often referred to as the "entourage effect". The term refers to the fact that a mixture of substances has a greater/better effect than the bare sum of their effects. This synergism is



well known in many natural substances. When using extracts of the whole plant, significantly fewer side effects are also recorded.

It is known that hemp is a very widely used plant, but it is less known that the plant extracts harmful substances from soil during growth and stores them in its biomass, which is why hemp is classified as a bioremediation plant. For that reason, quality control of hemp products must start already when selecting the location for growing hemp. Such locations must be unpolluted, without the presence of pesticides or heavy metals. Hemp growers also need to be wise in choosing fertilizers and plant protection products. Many pesticides are fat-soluble and concentrate together with cannabinoids in extracts, so growers must have the necessary knowledge about sowing, growing and harvesting hemp. The possibility of microbiological contamination of plants after harvest must also be considered. Plants must be carefully treated, making sure they are not exposed to potentially dangerous bacteria or mould. When harvesting, rigid hygiene regulations must be observed and at least gloves must be worn to prevent contamination of the plant material. Drying is also important, as the water content of the plant significantly affects the possibility of microbial growth. It is also good to check the potential content of mycotoxins, which can be harmful to health even in small concentrations, and they can also be present if drying and storage are not optimal. When processing hemp into finished products, various extraction methods are applied, which can additionally accumulate/concentrate certain pollutants, e.g. pesticides. Hazardous solvents, such as hexane, acetone, and pentane are sometimes used for extraction, so it is important to test hemp extracts for residual solvents as well.

The products for the programmes carried out at Rogaška Medical Center have demonstrated adequate quality, they are accompanied with analysis reports regarding the content of cannabinoids and are tested for the absence of pollutants.





Programme "Insomnia"

The link between sleep and cannabis has been well explored, and we know that the endocannabinoid system also regulates sleep. Sleep problems are globally present and affect the health and quality of life of almost 45 percent of the world's population. Up to 20 percent of adults have a chronic form of insomnia, while up to 45 percent of adults experience an acute form of insomnia at least once in their lifetime. Insomnia should not be perceived only as a problem with falling asleep or maintaining sleep, in fact, sleep is part of the circadian rhythm, the 24-hour day-night cycle. Sleep problems indicate, first of all, that the balance of the circadian rhythm is disturbed, and in order to improve your sleep in the long term, it is necessary to restore the balance of the internal clock or the circadian rhythm.

Cannabinoids of plant origin (and partly also synthetic analogues) show enormous potential for regulating imbalances in circadian rhythm and sleep. With their basic function of creating biochemical balance, cannabinoids influence the functioning of our biological clocks and other physiological processes (such as the production of neurotransmitters and hormones), which contributes to general health and well-being, and to healthy sleep. In addition to cannabinoid receptors, cannabinoids also activate serotonin receptors, influence the production of melatonin and reduce mental noise in our head when we are trying to sleep. Research and patient experiences testify to the fact that cannabinoids, especially CBD, lead to better quality sleep, fewer awakenings at night and more energy during the day. Cannabinoids, used at the right time and in the right concentration and composition, can be very useful when we want to fall asleep and for the correct structure of sleep, thus significantly contributing to the well-being and productivity of an individual and the society.

The programme consists of procedures and preparations which help your body to restore biochemical balance or homeostasis and regulate the circadian rhythm. The approaches are designed to enable the body to have its biological clocks, which regulate our entire circadian 24-hour cycle and, of course, sleep, optimally physiologically adapted to the rhythm of nature (day-night cycle). The "Insomnia" programme is an innovative programme based on the latest findings about the functioning of our brain and the biological clocks that regulate our sleep and energy levels during the day, as well as the knowledge of the functioning of our endocannabinoid system and its support with natural preparations.

Service Number Introductory interview with a medical specialist and review of the medical records Medical examination with a doctor - balneologist Final interview the recommendations by a medical specialist Consultation with a cannabinoid specialist 3 months after the completion of the programme - by e-mail or Zoom Therapy with cannabinoids 7 days Water drinking therapy with the healing mineral water Donat 7 days Nutrition counselling Laboratory Magnesium bath Soft pack - magnesium wrap (40 min) Facial reflexology (40 min) Hand reflexology (40 min) Bowen therapy (50 min) Inhalations Vital training (40 min) Book Cannabis in medicine (Slovenian, English or German version) 1680 EUF TOTAL

7-day programme

Programme "Anxiety/depression"

It is well known that poor functioning of the endocannabinoid system is one of the key factors in many neurological and neuropsychiatric diseases, including depression and anxiety. The nervous system is one of the more complex parts of our anatomy, helping us perceive our surroundings and interacting with other body systems so we can respond to these stimuli. The basic unit of the nervous system is a neuron - a nerve cell, and there are 100 million of them in the body, with 86 million in the brain. Chemicals such as serotonin and dopamine are produced here, and have a key effect on our mood and the onset of anxiety and depression.

The potential of cannabis for anxiety and depression has already been fully researched, especially the effects of CBD. It has very interesting and diverse effects, which are the result of its interaction with many receptors in our body, including serotonin receptors. CBD also has an effect on the metabolism of our own endocannabinoid anandamide, which was named after the characteristic feelings of bliss (ananda – bliss). CBD also has antioxidant and anti-inflammatory effects and is neuroprotective. Studies have shown that CBD changes the activity of brain regions involved in the control of emotional processes, such as the prefrontal cortex, hippocampus, amygdala and hypothalamus. CBD also reduces acute autonomic responses to stress and delayed emotional consequences through the activation of the 5-HT1A serotonin receptor. CBD reduces the sensation of learned fear and the expression of acute fear, shortens the time of numbness and contributes to fear-related memory loss. Cannabinoids can be an excellent pharmacological tool in dealing with anxiety, as evidenced by many studies as well as clinical experience.

The programme consists of procedures and preparations which help your body to restore biochemical balance or homeostasis, mainly regulating mood and emotional balance. The neuromodulatory properties of cannabinoids are well studied, as are their anxiolytic and antidepressant effects. Cannabinoids work particularly well in patients in whom chronic stress has been or is still an important factor in their symptomatology. The "Anxiety/Depression" programme is an innovative programme based on the latest findings about the functioning of our brain and the balance of neurotransmitters, as well as on the knowledge of the functioning of our endocannabinoid system and its support with natural preparations.

7-day programme

Service	Number
Introductory interview with a medical specialist and review of the medical records	1
Medical examination with a doctor – balneologist	1
Final interview the recommendations by a medical specialist	1
Consultation with a cannabinoid specialist 3 months after the completion of the programme – by e-mail or Zoom	1
Therapy with cannabinoids	7 days
Water drinking therapy with the healing mineral water Donat	7 days
Nutrition counselling	1
Laboratory	1
Magnesium oil massage (30 min)	2
Bowen therapy (50 min)	2
Soft pack – magnesium wrap (40 min)	2
Magnesium bath	2
Hand reflexology (40 min)	1
Reflexology foot massage (30 min)	1
Relaxation and energy techniques (group training)	4
Inhalations	3
Book Cannabis in medicine (Slovenian, English or German version)	1
TOTAL	1540 EUR

Programme "Burnout": 7-day programme

Life in modern society comes with many challenges. Our body perceives all stimuli that threaten our cellular balance, such as stressors, whether they are toxins, pathogens, work stress, light pollution, electrosmog, lack of sleep or emotional reactions. Most experts today agree that stress, which is considered an epidemic of the 21st century, is responsible for the development of many, if not all, chronic diseases.

In the course of evolution, our body has developed in such a way that it can quickly adapt to a dangerous situation. Humans have developed a mechanism that quickly provides greater amounts of energy for an appropriate response to a dangerous situation, i.e. fight or flight, thus improving our chances of survival. This is our stress response and is similar in many ways to the endocannabinoid system. When our brain perceives a dangerous situation, the hypothalamus sends a stress response to the pituitary gland, which then releases hormones, which in turn trigger the release of hormones in the adrenal glands. This is called the hypothalamic-pituitary-adrenal axis (HPA-axis). However, the human body is not adapted to long-term stress, which has become almost a constant in modern life. Thus, the body can react with a "fight or flight" reaction even to everyday situations, such as traffic jams, workload, deadlines, societal expectations in terms of "degree – marriage – house – children", and much more. For our physiology, this means that stressors are constantly present and that our balance is constantly threatened. A long-term or repeated stress response affects the functioning of the organs of the HPA-axis, which can cause chronic fatigue syndrome and burnout. Signs of burnout can be mild, such as weakness after recovering from an infection that lasts longer than usual, to more serious signs such as crippling constant fatigue, insomnia, sore muscles, recurring infections, headaches, and digestive problems.

The program consists of procedures and preparations which help your body to restore biochemical balance or homeostasis and regulate the entire HPA axis (from stress perception to cortisol secretion). The approaches are designed to allow the body to restore biochemical balance at a cellular level, focusing primarily on nervous system excitability and hormonal balance. Studies as well as clinical practice have confirmed that cannabinoids help restore the proper functioning of the HPA-axis and also the daily rhythm of cortisol secretion, which often contributes significantly to the symptoms of burnout.

Service	Number
Introductory interview with a medical specialist and review of the medical records	1
Medical examination with a doctor – balneologist	1
Final interview the recommendations by a medical specialist	1
Consultation with a cannabinoid specialist 3 months after the completion of the programme – by e-mail or Zoom	1
Therapy with cannabinoids	7 days
Water drinking therapy with the healing mineral water Donat	7 days
Nutrition counselling	1
Laboratory	1
Magnesium bath	3
Soft pack – magnesium wrap (40 min)	3
Bowen therapy (50 min)	2
Facial reflexotherapy (40 min)	1
Hand reflexology (40 min)	1
Reflexology foot massage (30 min)	1
Relaxation and energy techniques (group training)	3
Inhalations	3
Book Cannabis in medicine (Slovenian, English or German version)	1
TOTAL	1680 EUR

Programme "Migraine"

Pain is an interesting phenomenon. We cannot see it, cannot prove it or measure it objectively. Yet we all know it and have felt it in our lives, pain is a deeply personal and subjective sensation. Acute pain has a surprisingly huge importance in our lives and our evolution. The sensation of pain has been preserved through millions of years of evolution and has improved the survival chances of many species. In medicine, we have relatively good approaches to the treatment of acute pain, but it is completely different with chronic pain. Chronic pain is quite complex for medicine, it often does not respond to drugs, and patients find themselves in situations where they cannot alleviate the pain with available drugs. The feeling of pain is transmitted by certain nerve fibres that carry pain impulses from the point of origin to the brain, and here the perception of pain is influenced by many factors. These specific neurons are called nociceptors. Recently, a lot of research has confirmed the theory that pain is also associated with inflammation, which means that the feeling of pain is also associated with an inflammatory reaction. Such an aspect enables different approaches in the treatment of pain, so that inflammatory processes are also targeted in the course of the therapy.

Migraine usually occurs sporadically with varying intensity. However, in a certain percentage of patients, pain and frequency increase and chronic migraine develops. In addition to pain, migraine headaches can also be accompanied by a throbbing sensation, nausea, vomiting, sensitivity to light and sound, and general weakness. Both the symptoms and the processes leading to migraine headaches are significantly influenced by cannabinoids. A very important factor is neurogenic inflammation, which affects the frequency and intensity of pain. Cannabinoids, as neuromodulatory and anti-inflammatory agents, have a significant effect on this process. Cannabinoids can also effectively alleviate the pain itself and nausea.

The program consists of procedures and preparations which help the body to restore biochemical balance or homeostasis. To achieve this, it is important to reduce inflammatory responses in the body (chronic inflammation) and calm the overstimulated nervous system. The approaches are designed to allow the body to restore its biochemical balance at a cellular level, focusing primarily on the nervous system balance (secretion of neurotransmitters and hormones) and anti-inflammatory action. Studies as well as clinical practice have confirmed that cannabinoids are exceptional anti-inflammatory and immunomodulatory molecules that have proven themselves in a wide variety of conditions, including acute and chronic migraine headaches.

Service Number Introductory interview with a medical specialist and review of the medical records Medical examination with a doctor - balneologist Final interview the recommendations by a medical specialist Consultation with a cannabinoid specialist 3 months after the completion of the programme - by e-mail or Zoom Therapy with cannabinoids 7 days Water drinking therapy with the healing mineral water Donat 7 days Nutrition counselling Laboratory Acupuncture (30 min) Relaxation and energy techniques (group training) Anti-stress head and scalp massage (30 min) Facial reflexotherapy (40 min) Bowen therapy (50 min) Inhalations Vital training (40 min) Book Cannabis in medicine (Slovenian, English or German version) TOTAL 1720 EUF

7-day programme

Programme "Strengthening of the immune system"

7-day programme

We are all born with innate immunity that provides general and non-specific protection. This includes skin and mucous membranes, which are the first line of defence in preventing pathogens from entering the body. The advantage of the innate immune response is that it reacts very quickly and in full swing, regardless of whether we are dealing with a particular microbe for the first time or we have already encountered it many times before. In addition to the innate one, we also know a specific immune response (for example, the formation of antibodies), and this immunity develops throughout our lives with exposure to microbes and also vaccines. During the acquired immune response, special memory cells are formed that remember the specific pathogen, and if we are exposed to it again, the immune system responds much faster. Everyone's immune system is different. Some people never seem to get sick, while others seem to be sick all the time. In principle, adults have a more developed and efficient immune system because they have been in contact with more microbes during their lives. But this is not the rule, because the immune response is influenced by many factors, and for an effective immune response, many processes must take place at the right time and in the right place.

At first glance, the immune system and the endocannabinoid system (ECS) have a lot in common. Both are complex systems and have the task of protecting the human body. The immune system specializes in protecting against bacteria, viruses and parasites, and the ECS protects us from anything that can threaten our biochemistry. For our body to function properly, both systems must work well and cooperate, as this is the only way long-term health is possible. With cannabinoids, we can have a significant impact on immune responses and chronic inflammation, thus positively influencing the strengthening of the immune system.

The programme consists of procedures and preparations which help your body to restore biochemical balance or homeostasis and strengthen the immune system. Therefore, it is important to reduce chronic inflammation in the body and create the required conditions in the body so that the immune system can respond effectively to various pathogens. Studies as well as clinical practice have confirmed that cannabinoids are exceptional anti-inflammatory and immunomodulatory molecules that have proven themselves in very different conditions in which the immune system does not function optimally, for example in rheumatic diseases, autoimmune conditions and chronic inflammatory diseases, as well as a generally weakened immune system and rejection reactions after tissue/organ transplant.

Service	Number
Introductory interview with a medical specialist and review of the medical records	1
Medical examination with a doctor – balneologist	1
Final interview the recommendations by a medical specialist	1
Consultation with a cannabinoid specialist 3 months after the completion of the programme – by e-mail or Zoom	1
Therapy with cannabinoids	7 days
Water drinking therapy with the healing mineral water Donat	7 days
Nutrition counselling	1
Laboratory	1
Inhalations	6
Detox massage (40 min)	2
Magnesium bath	3
Soft pack – magnesium wrap (40 min)	2
Vital training (40 min)	2
Dr. Vodder lymph drainage therapy (50 min)	2
Bowen therapy (50 min)	1
Book Cannabis in medicine (Slovenian, English or German version)	1
TOTAL	1590 EUR







