

*Prikaz slučaja /
Case report*

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WHAT DO WE KNOW ABOUT THE
INFLUENCES OF MICROBES ON HUMAN
HEALTH AND THE POSSIBILITIES OF ITS
ESTABLISHMENT, MAINTENANCE AND
PROTECTION?

ШТА ЗНАМО О УТИЦАЈИМА МИКРОБА
НА ЉУДСКО ЗДРАВЉЕ И О
МОГУЋНОСТИМА ЊЕГОВОГ
УСПОСТАВЉАЊА, ОДРЖАВАЊА И
ЗАШТИТЕ?

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Key words

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Abstract

The latest experimental scientific research on mice on the influence of saprophytic microbiomes on their physical activity through the produced Lak-Fe substance, a signal molecule that is sent by a stimulus from the intestine in/to the „reward” center in the brain, stimulates the response of increasing the activity that created and produced it, open wide space for further research in the human population as well.

To prevent the consequential negative effects of human behavior, increasingly often with devastating outcomes, all available interventions are necessary, both for the urgent establishment of a proper relationship of people towards themselves, the immediate and wider environment, and also in relation to planetary health! And individual efforts, although they may seem small, can collectively move the outcome of the undertaken activities in a good direction. In any case, it is important to set goals and make a plan of activities to reach them, be convinced that they are necessary and achievable, follow them and finally reap all their beneficial fruits!

Reference to the establishment of coexistence with the natural environment and the adoption of a model of daily healthy living habits as (simple) measures to achieve a good or at least satisfactory health condition, and as a way of counteracting already present chronic non-infectious systemic diseases, almost unavoidable and seemingly hidden silent killers that threaten human lives, should be considered necessary to ensure health and protect against consequential damage to the organism.

Everyone can prevent, control and reduce the risk of their presence and/or development by daily exercise of known healthy life activities, as a natural, necessary and default form of opposition to the aforementioned pathological conditions, in order to achieve a more beautiful and comfortable life, both for each individual and for life of all people in the community.

INTRODUCTION

Until recently, it was thought that the trillions of microbes that live on our skin and in us, especially in the intestines, which for less than two centuries we thought we knew were only saprophytic organisms that mostly do not cause us health problems, now we know that the genes of these microbes, microbiomes, create many chemical substances that affect the human body and thus can contribute to the onset and development of heart disease, type 2 diabetes, obesity, depression, anxiety, degenerative neurologi-

cal diseases¹... the most common diseases of modern humanity!

The result of the production of many chemical substances of the microbiome for the aforementioned risks to the physical health of people can manifest itself in mental functions, especially in the complex form and nature of behavior.

By comparing a cohort of mice that exercised (exercisers) on a treadmill with mice that did not exercise (slackers), it was found that, contrary to the previous belief that there were no differences in genes between them, the results of the

study showed that differences in the microbiomes of gut microbes there are: the exercisers had more bacteria whose microbiomes produced the chemical N-lactoyl-phenylalanine, or Lac-Fe, a signaling molecule that, when the mice ran, sent signals from the gut to the brain and stimulated reward centers. With this, the exercisers got their racing peak and used every opportunity to continue running. Because of the different microbiome, the sloths did not receive such a reward and remained in a static position, practically motionless. But when the exerciser's gut microbiome was injected into the sloths and they started running on a wheel and exercising!²

From the results of the mentioned experiment, the conclusion emerged that the same encouraging effect could be achieved in humans, with a high probability, as a stimulus for activating physical activity in a static population, insufficiently spontaneously motivated to engage in physical exercise, a habit of extreme importance for achieving and maintaining good health!

Analysis of current knowledge about the consequent risks of harmful forms of behavior and wrong lifestyle habits for the planet and human health

We know that three out of five people worldwide die from diseases related to acute or chronic inflammatory diseases, which represent serious red lines (flags) for the health and life of each and every person on Earth. Because we know that health is not everything, but without health everything is nothing!

It has been scientifically proven that any low-grade chronic inflammation can become a silent killer that contributes to cardiovascular disease, the development of malignancies, type 2 diabetes and/or other chronic diseases.³

In addition, we must remember that everything that happens on Earth is interconnected, so our task should be to master the knowledge of how human health and planetary health intersect, and what to do to correct mistakes in human behavior towards the planet and the related consequences. For the health of people do not happen or avoid?!

Let's remember that Earth Day, promoted more than half a century ago (1970), was marked as a day of people's awareness of environmental issues. In fact, the need to establish the correct awareness of people about our environment has never been more important than now. The effects of climate change on Earth: fires, stormy winds, floods, droughts, heat waves, rising sea levels, extinction of many living species and much more, directly or indirectly threaten the survival of everyone and everything, especially the most vulnerable representatives in each ecosystem.

Air pollution from fossil fuels and fires, for example, contribute to the mass emergence and development of respiratory diseases, and as regions become increasingly warm, the geographical and seasonal boundaries of ticks and mosquitoes, which are carriers of infectious diseases, spread at the same speed as fire, endangering human health inhabited in those areas.

The concept of planetary health both recognizes and affirms that the ecosystem and our health are inextricably intertwined. All actions and events have complex, cross-consequential (downstream) effects: some are expected, others are surprising, and many are probably unknown. That is

why all the necessary interventions are necessary for their urgent and proper solution, to prevent the consequent negative effects with increasingly frequent devastating outcomes! Even individual efforts, although they may seem insufficient, can collectively move the outcome of undertaken activities and events in a good direction.

The question that requires a quick and accurate answer is: What can be done in order to effectively prevent, suppress and/or remove the consequences of the mentioned risks to human health in the best way?!

The establishment of healthy lifestyle habits, apparently such simple measures in training in the fight against the occurrence of the aforementioned diseases that threaten all human lives, are considered a necessary factor in ensuring health and protection from the consequent damage to the body caused by the presence of chronic low-grade inflammation. Otherwise, it will turn into a silent killer, which, with the appearance and development of cardiovascular and malignant diseases, type 2 diabetes and other aforementioned diseases, disturbs the quality of life and shortens the life span of the sufferers. Successful opposition and protection from them means the most that can and should be achieved, because health as the foundation of life requires and deserves it!

It is unusual and expected for any reasonable person that the instructions - advice that follow, which refer to the exercise of practically and theoretically well-known daily life activities, as a natural, necessary and default form of opposition to the aforementioned pathological conditions, and that they are unfortunately not practiced even more often in real life! Is the cause of this a lack of focus on them due to simplicity and optional default, or is it primitively considered that only something that is complex and less comprehensible has value, and therefore has greater value and significance?

Possibilities of establishing a healthy lifestyle, its maintenance and preservation

It is believed that many non-infectious inflammatory diseases are prevented and suppressed by consuming organically produced plant foods. Although many anti-inflammatory diets are not scientifically based, life practice shows that there is a possible choice of foods that should or should not be used to help suppress inflammation or reduce their expression. Adopting a plant-based diet as the healthiest and increasing the amount of its consumption, along with reduced meat consumption, reduces the risk of cardiovascular disease, stroke, obesity, high blood pressure, type 2 diabetes and many malignancies. As not all plants are the same, and plant food also varies greatly regionally, according to geo-climatic characteristics and nutritional content, it also differs in terms of impact on the environment, the planet and the health of living ecosystems, so it is important to master this by reading the content listed on food packaging labels, which can be helpful in getting to know their stated characteristics.

Compared to the production and consumption of meat meals, plant-based meals have many other advantages for the health of both people and the Planet. For example, for the same amount of protein, plant-based meals have a much lower carbon footprint (footprint) into the soil and atmos-

phere, and in addition, much less natural resources like land and water are used for their production.⁴

Regular moderate physical activities and practicing a little aerobic exercise reduce the risk or progression of inflammatory diseases, heart diseases and some types of malignancies, improve physical and mental health, bone strength, achieve weight control, reduce the risk of loss of balance and ensure the prevention of falls in the elderly. There is a well-known saying that physical activity replaces almost any medicine, while no medicine can replace it!

In particular, the urban population should give priority to active transport - choosing to walk or transport by bicycle, even using public instead of individual transport by motor vehicle, which for planetary health achieves a reduction in the emission of harmful exhaust gases, which means reduced carbon emissions and prevention of its warming, and less environmental pollution and cleaner air are ensured for the Earth and for people at the same time. Health recommendations are in the role of encouraging, especially the adult population, to be moderately physically active for at least 150 minutes every week, with two shorter training sessions to strengthen the muscles of the trunk and limbs, less manifested consequent climate change.⁵

Weight loss and reduction of abdominal fat deposits will result in the removal of body fat cells, the type that produces chemical pro-inflammatory substances. Diets that reduce the influence of food sugar on body weight also eliminate the risk of fat tissue formation, which would otherwise, in the cascade of subsequent pathological events, represent a downstream trigger of the next disease, an inflammatory process with possible unforeseeable consequences. With the aforementioned simple dietary measures available to everyone, the occurrence and progression of non-infectious inflammation of multiple body systems is controlled and good health is achieved.

Sufficient night sleep ensures the necessary daytime energy and productivity, while insufficient sleep causes some of the already listed health disorders, which is especially dangerous for the cardiovascular system, and thus for the life of modern man!

Quitting the habit of smoking as soon as possible is the best decision for a smoker because it soon leads to a reduction and then to the elimination of health problems caused by this fatal addiction. Inflammation of the mucous membrane in the respiratory system ceases to exist within a few weeks after quitting smoking, and there is a rapid recovery and improvement of all aspects of chronic inflammation of the respiratory tract. In many respectable studies of risk factors in the occurrence of heart attacks and strokes, smoking has been indisputably proven to be an independent etiological factor, and for this unhealthy habit it can be pointed out that its role in often fatal events is not the contagiousness of the disease, but the contagious habit! Even if there have been unsuccessful attempts to give up that unhealthy habit before, it is always repeated with a greater chance of success! That's why you should never give up in the fight to achieve health and a better quality of life in the future!

Banning or limiting the daily dose of alcohol consumed is justified and useful when it comes to the presence of an inflammatory process. If the daily dose is exceeded, the out-

come is always harmful for the inflammatory disease because it gets out of control. Smaller daily amounts of alcohol can also be useful, and the rule for its determination is contained in moderation: a glass of up to two wines, necessarily with fish, or a glass of alcohol 0.2 - 0.3 dl after a good meal, preferably with a little high-quality full-fat, can and according to the French model of moldy cheese.

To get rid of chronic stress, the presence of which can cause the development of inflammation and cause very serious health disorders, rheumatoid arthritis, cardiovascular disease, depression and/or inflammatory bowel disease, in addition to the above-mentioned procedures, sometimes requires turning to professionals for help, best and most often a psychologist or psychiatrist.

All in all, conversations on this topic held in the immediate environment have a certain importance, because, although one may get a superficial impression and subjective experience that such actions are unimportant, they are useful in any case, because sharing thoughts about what is bothering someone, what is important to undertake and what can objectively be done to achieve a positive outcome, contributes to the development of a sense of less isolation that helps to support the restoration of self-confidence, personal and building a better community that will contribute to well-being and their greater resilience, in which everyone will feel safer, more satisfied and more comfortable.

Discussion and conclusion

If gut microbiomes can influence the motivation of animals to be very physically active, could saprophytic microbiomes also influence the motivation of people to use or avoid addictive substances, to eat healthier foods, to have more harmonious work and social communication, to socialize better and easier, to do anything useful for themselves and others?

The assumption is that, as in the experimental research on the animal cohort, the result would be analogous to the human cohort, provided that the research is carried out on it according to the strict rules of scientific research. We expect confirmation of this when such research is carried out and its results become known to the professional and scientific public!

Changes that are often necessary to correct previously wrong and often harmful forms of behavior/everyday habits, individually or in the environment, if they are positive for one person, they may not be for another person, so will the orientation to the choice of diet, exercise and choice movements in the local environment to be authentic according to the characteristic requirements of work, place of residence, educational and economic status, character traits and... whatever but already the decision to start corrective procedures with goal setting is a path in a good life determination.

In addition, if individual promises and goals are shared with another person, and that person does the same with a third, fourth ..., then such actions are reinforced and, who knows, maybe one of the people in the communication ring on his further life path could be employed in a company that decides how and what everyone, including our children, will work, study, eat, what and how some urban planner will decide for pedestrian and bicycle paths, the president of a food corporation about its production program!

Prevention, control and reduction of the risk of their presence and/or development can be achieved by everyone by consuming organically produced vegetable food, regular physical activities, reducing body weight and reducing abdominal fat deposits, getting enough sleep at night, giving up the habit of smoking, limiting the use of alcohol and getting rid of chronic stress, and through thematic discussions in public life, by sharing thoughts about what is important

and what to do, it is possible to objectively influence the building and development of a better environment and community that will contribute to benefits and provide everyone with the experience of greater security and satisfaction, a more beautiful and a more comfortable life.

Сажетак

Најновија експериментална научна истраживања на мишевима о утицају сапрофитских микробиома путем произведене Лак-Фе супстанце на њихову физичку активност, сигналног молекула који одаслан подражајем из црева у/до центра за “награђивање” у мозгу подстиче одговор појачања активности која је то стварање и произвела, отварају широки простор за даља истраживања и у хуманој популацији.

За спречавање последично негативних ефеката људског понашања, све чешће са поражавајућим исходима, неопходне су све расположиве интервенције, како за хитно успостављање правилног односа људи према самима себи, непосредном и ширем окружењу, тако и у односу на планетарно здравље! И појединачни напори, иако могу изгледати мали, заједнички могу померити исход предузетих активности у добром смеру. У сваком случају је важно поставите циљеве и сачинити план активности којима ће се до њих доћи, бити уверен да су они потребни и оствариви, треба их следити и коначно убирати све њихове добробитне плодове!

Упућивање на успостављање суживота са природним окружењем и преузимање модела свакодневних здравих животних навика као (једноставних) мера у остваривању доброг или бар задовољавајућег здравственог стања, и као начин супротстављања већ присутним хроничним неинфективним системским обољењима, скоро незаобилазним а наизглед прикривеним тихим убицама који/а угрожавају људске животе, имају се сматрати неопходним у обезбеђивању здравља и заштите од последичних оштећења организма.

Превенцију, контролу и смањење ризика њиховог присуства и/или развоја свако може остварити свакодневним упражњавањем познатих здравих животних активности, као природних, неопходних и подразумеваних облика супротстављања наведеним патолошким стањима, ради остварења лепшег и удобнијег живота, како за сваког појединца, тако и за живот свих људи у заједници.

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