Basic concepts of information medicine

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Main terms of informational medicine

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SUMMARY

A system of basic concepts of information medicine is proposed, which describes the informational interaction of a biological system and weak variable electromagnetic fields.

A basic model of system informational physiology is formulated, suitable for modeling and interpreting the results of biological and physiological experiments.

New system-physiological concepts of control signal, virtual state, follow-up reactions and representation of the acceptor of the result of these reactions in the interaction of the organism and the control signal are defined.

Basic methodological approaches to the study of information transmitted by a control signal have been developed, describing all its manifestations known at present.

Key the words: informational the medicine, manager signal, informational resonance, virtual state of the body, follow-up reaction, vegetative resonance test, bioresonance therapy.

RESUME

System of main terms of informational medicine describing informational interrelation of biological system and weak alternating electromagnetic fields is suggested.

Basic model of systematic informational physiology useful for modeling and interpretation of results of biological and physiological experiments is formulated.

New systemic-physiological terms of controlling signal, virtual condition, reactions of following and resistance, representation of acceptor of action results during interaction of organism and controlling signal are determined.

Basic methodological approaches for studying information transferred by controlling

signal describing all its manifestations known at the present time are developed.

Keywords: informational medicine, controlling signal informational resonance, virtual condition of the organism, reaction of following, vegetative resonance test, bioresonance therapy.

1. INTRODUCTION

This paper is largely a continuation of [1], so for independence of presentation, we recall some of its provisions.

In modern domestic healthcare, a number of methods are widely used, united by the name "information medicine" (IM) [1], in which superweak alternating electromagnetic fields (SWEMF) are used for diagnosis and therapy of a patient. These include, in particular, the R. Voll method [2], autonomic resonance test [3], endogenous and exogenous bioresonance therapy [4–5], homeopathy [6], pulse hemoindication, and others.

At present, a paradoxical situation has arisen: while the share of use (volume of application) of information medicine in healthcare is steadily growing, including the increase in the number of scientific publications and dissertations on this topic, modern academic science lacks not only a language for describing the relevant phenomena, but even its basic concepts are not defined.

As a result, in those works on MI that consider the methodological principles of designing experiments and clinical studies, as well as theoretical models of phenomena in this area, the presentation (often forcedly) is conducted in "Aesopian language". Terminology is vaguely defined and varies from work to work. Instead of a scientifically correct, in particular definite and fixed, description of the basic concepts and phenomena under consideration, figurative comparisons “explaining them” are used. All this cannot but cause (and causes) criticism of IM by its opponents, mutual misunderstanding and distrust of specialists working in various fields of this direction, the impossibility of an objective presentation of its main facts and provisions.

It seems appropriate to create a scientific language that adequately describes the interaction of biological systems with PEMT and at the same time allows the translation of the concepts used in it into the languages of fundamental disciplines: physics, chemistry, mathematics, biology and physiology. The latter is necessary for the possibility of a correct description of specific situations and phenomena of MI at the level of their natural scientific understanding, which, in turn, allows planning and conducting correct, from the point of view of the modern scientific paradigm, experiments and clinical studies in MI.

First of all, the adoption of IM at the level of the medical field, based on objective natural science laws, requires a significant expansion of the physiological paradigm. In fact, it turns out to be necessary to form a new direction in physiology (both normal and pathological), within which the interaction of the organism and the control signal (CS) is considered [1]. This still developing section

physiology, we will call in this work system information physiology (SIF). The first stages of building a SIF should be considered:

– formation of a circle of concepts that complement the orthodox (classical) physiology, necessary for the description of tasks and phenomena in the SIF;

– formation of a systematic and methodological basis for the development theoretical models, as well as basic experimental and clinical studies.

In this paper, we set much more modest goals:

1. Determine the initial range of concepts needed to describe characteristic tasks and situations of SIF.

2. Give the main methodological approaches to the description of information, transmitted to the body during its interaction with the US.

2. INFORMATIONAL NATURE OF INTERACTION

CONTROL SIGNAL AND BIOLOGICAL SYSTEM Recall that it has been established in experiments and clinical studies that some SPEMF, despite the extremely small amount of energy they carry, cause pronounced biological reactions in biological systems, in particular in the human body [2–6]. The effect of a pronounced biological reaction during the interaction of an organism with a certain SPEM is called information resonance (IR) [7–8], and the very weak alternating electromagnetic field that causes it is called a control signal (CS) [1, 9–10].

The choice of the term "information resonance" in the presentation is justified by the fact that the set of SPEMPs that cause it for each biological system, in particular each human organism, is individual and reflects the internal state of this system (organism). Therefore, by influencing the body with a given set of SPEM, it is possible to test it (by the responses that appear in it or by their absence), that is, to obtain information about its state.

The choice of the term "control signal" for SPEM, causing informational resonance, is also not accidental. It is possible to change the state of the body using the reaction that develops in it under the influence of the CS, that is control the body with it. At the same time, the (biochemical) energy biological reaction - IR, which develops in the body under the influence of US - is many orders of magnitude higher than the energy carried by it. Strictly speaking, for the majority of CSs used in modern MIs, the energy they carry cannot be detected using commonly available physical instruments. At the same time, biological systems, in particular the human body, easily isolate such a CS and react to it [7–8]. It is the above feature of the US that justifies the use of the term "superweak alternating electromagnetic field" in relation to its physical carrier.

To date, only one situation is known in science, in which the energy of the reaction of the system exceeds the energy of the impact on it [1]. This is a situation where the system that is affected is self-regulating, moreover, with a specific program of action (program

self-fulfillment) that it must fulfill in the environment, and the impact is a signal that transmits to it information about the change in the conditions in which this self-realization takes place or will take place. In this case, the self-regulating system adapts to changing conditions for its self-realization. For the sake of completeness, we note that the concept of self-realization is described in detail in [11]. The reader who is not familiar with this concept and does not have the time or intention to familiarize himself with it may, until a special warning given in the text, consider that the terms "self-fulfillment" and "life activity" are equivalent, that is, they denote the same concept.

The reaction of the system to a change in the conditions for self-realization can be current or even advanced adaptation, depending on whether this system information about changes in current or possible future conditions in which its self-realization should proceed. It is clear that the adaptation under consideration is carried out by the system:

- taking into account the information transmitted to it by the RS;
- using its internal sources of biochemical energy. The latter just allows the system to carry out adaptive reactions that require more energy than is contained in the CS transferred to it.

At the same time, it is known that any biological system, in particular the human body, is just a self-regulating system that perceives and uses information received from the environment [12]. In addition, it can be considered as a system with a program of self-fulfillment [11]. Finally, P.K. Anokhin showed that any biological system, in particular the human body, is able to perceive information about a possible (modeled by it) future and use it, carrying out advanced adaptation to tasks that it has yet to solve. to be decided. The corresponding property of a biological system was called by him a leading reflection of reality [11].

The above reasoning can be integrated in the form of the following conceptual system-physiological model of the informational interaction of the organism and the SS:

1. The body is a self-governing system with a program self-realization (this concept is described in detail in [eleven]).

2. There is a level of self-regulation of the body, which we will continue to to call the level of biophysical regulation at which the body allocates a certain class of SPEMP from the surrounding electromagnetic background, causing it to have a pronounced (resonant, bioresonant) biological reaction, that is, control signals (CS). The rest of the PEMF are classified by him as noise and do not cause pronounced biological reactions.

3. Each RS is interpreted by the body as an information package, containing information about an additional condition for self-fulfillment, that is, under what, current or even expected future changes in the conditions of self-fulfillment, it should take place.

4. Actually resonant (bioresonance or, as mentioned earlier, energy-information) reaction of the body in response to some CS is is an anticipatory reaction of adaptation to an additional condition of self-fulfillment, information about which is transmitted by this RS.

5. Changes in certain indicators of the body, synchronized with the beginning of the reaction of advancing adaptation and allowing to predict its final result with a certain degree of accuracy, represent a representation of the acceptor of the result of the action of the advancing adaptation reaction of the organism as a result of its interaction with the considered CS. An example of such changes are changes in the conductivity of acupuncture points, which allows, in particular, to carry out advanced monitoring of the result of the action of such a signal using electropuncture testing.

6. Representation of the acceptor of the result of the action of the anticipatory reaction adaptation is brought to the systems of representation of anticipatory adaptation reactions of the body, which, in particular, include all known systems of microacupuncture.

3. MINIMAL EXPANSION OF THE PHYSIOLOGICAL PARADIGMA, DESCRIBING THE TASKS AND PHENOMENA OF THE SYSTEM INFORMATIONAL PHYSIOLOGY

The concepts of control signal and informational resonance introduced in the previous section, as well as the reaction of advancing adaptation and advancing representation of the result of the reaction of advancing adaptation are still not enough to form the basic language of SIF [1]. It is necessary to introduce two more concepts: the virtual state of the organism and the nonequilibrium reaction advancing adaptation, or following reaction.

Recall that from the point of view of the general theory of control, the body can be considered as a reflective system that:

- models the surrounding reality, including himself in it as component part;

– uses the obtained model for self-realization [11–12].

At the same time, there is always a certain discrepancy between the objective state of reality, in this case, the state of the organism and its environment, and a reflection of this state, used by this organism for self-regulation. There are at least two objective reasons for the continued existence of such a discrepancy.

The first consists in the inevitable incompleteness of the organism's reflection of itself and the environment, as well as the inevitable distortions that arise in the construction of any such reflection. For example, most modern theories of aging are based on the concept of incomplete reflection by the body of the processes of gerontogenesis developing in it, and, as a result, its inability to develop an adequate response adaptive reaction in relation to these processes [13]. In the case of aging processes, an adequate response adaptive reaction may not even be provided for by the physiology of an aging organism [14–15].

There is, however, a second, much more important reason for MI and SIF.

existence of the described discrepancy. The fact is that, as already noted, the reflection of reality carried out by the body is always leading reflection. This means that the body has some physiological memory, which, following the terminology introduced in [11], we will sometimes call the interpreted past. Based on this physiological memory and using information about its current (present) state and the state of the environment, the body constantly builds a certain model of its possible future - a simulated future (in the terminology of [11]) and then adapts itself to the built model [12]. Thus, the current self-regulation of the organism always differs from the self-regulation required simply to maintain its homeostasis, and a certain set of anticipatory adaptation reactions constantly takes place in it [12].

Any CS coming from outside, assimilated by the body, modifies the set of anticipatory adaptation reactions occurring in it, supplementing them with an anticipatory adaptation reaction to an additional condition of self-fulfillment, information about which it carries. "Objectively" this condition, generally speaking, may not hold. In this case, a non-equilibrium ("not balanced" by the objectivity of the conditions for self-realization) anticipatory reaction of the organism's adaptation arises.

The state of an organism, in which the model of reality (of itself and its environment) formed by it, has a discrepancy with its objective state, is further called its virtual state.

The non-equilibrium anticipatory reaction of the organism's adaptation, caused by the assimilation of the CS, which carries information about a certain condition of self-realization that does not take place in the surrounding reality, is further called the reaction of the body following this CS.

The mechanism of development of the follow-up reaction has direct analogues in the academic physiological paradigm. It is in many ways similar to the body's response to information coming to it from sensory-perceptive systems. Figuratively speaking, the virtual state can be compared with a kind of “sweet dream” or, on the contrary, with a “threat idea” that arise in our psyche in response to sensory-perceptual signals of usually subthreshold intensity level received from the environment and even from within the body itself. These subthreshold sensory cues are largely responsible for our behavior (the psychological analogue of following responses), which can sometimes seem completely unrelated to the objective environment. Modern psychology suggests that the emergence of such a “dream” or “impression of a threat” is always associated with a certain subthreshold sensory signal coming from the external environment or even from the organism itself and creating a kind of “psychophysiological resonance”. This subthreshold signal plays a role in our psychological life similar to the role of CS in informational medicine. Just like the CS in information medicine, the subthreshold sensory signal in psychology is difficult to detect [16]. However, perhaps we should not go too far with this analogy, because the mechanisms of absorption and effects of SS on the body have not yet been studied and can present similar to the role of CS in information medicine. Just like the CS in information medicine, the subthreshold sensory signal in psychology is difficult to detect [16]. However, perhaps we should not go too far with this analogy, because the mechanisms of absorption and effects of SS on the body have not yet been studied and can present similar to the role of CS in information medicine. Just like the CS in information medicine, the subthreshold sensory signal in psychology is difficult to detect [16]. However, perhaps we should not go too far with this analogy, because the mechanisms of absorption and effects of SS on the body have not yet been studied and can present

many surprises.

Informational medicine began with the discovery of a class of CS, for which the subsequent reaction to them was obviously clear. Historically, its first section was Hahnemann's homeopathy [17]. Hahnemann postulated that:

- for the treatment of the disease, it is necessary to use small doses of poisons, causing symptoms in healthy people similar to the disease being cured;

– “infinitely small” doses of such drugs work most effectively, obtained using the procedure developed by Hahnemann himself to potentiate their "tinctures", that is, the initial material samples of the substances from which they are made;

– a potentized homeopathic remedy can only cure those diseases, the manifestations of which are similar to poisoning with its "tincture".

Thus, Hahnemann experimentally found a way to produce a sufficiently large class of CSs with a given type of follow-up reactions that they caused, and at the same time a uniform way to describe their effects on the body.

Since Hahnemann used only poisons as "material samples", the consequences generated by them modeled, in fact, all kinds of types.resistance reactions organism.

Indeed, an adaptive reaction to the ingress of poison into the body will be, on the one hand, its binding and elimination, and, on the other hand, compensation for the damage caused by it. If there is no substrate of the poison in the body, and the CS that transmits information about its presence takes place, then we will observe the following reaction in the form of an advanced reaction to compensate for the damage caused by the missing poison. In traditional physiology, such a situation is assumed to be impossible, the body cannot react to something that “is not there”. That is why it is methodologically incorrect to describe and study the US and the following reactions caused by them without expanding the existing physiological paradigm, because we will constantly come to a contradiction with it. It is precisely the lack of the necessary expansion of the paradigm, in our opinion, that

The reaction of resistance, as a reaction of the body's adaptation to an additional condition for self-fulfillment in the form of one or another damage to its tissues, organs and systems, was also considered by M.G. Abakarov under the name of forced adaptation reaction [18].

Following reactions are not limited to resistance reactions. The presence in the body of any substance or process does not necessarily have to cause a reaction of protection against them, although the reaction of adaptation to them will always be observed. In particular, in the practice of information medicine, CSs are widely used, causing reactions of support (acceptance), in the event of which the body, as it were, "supports" certain tissues, organs, systems, and even certain processes in itself. According to the generally accepted opinion, organ preparations or sarcodes obtained from healthy tissues, organs, or systems of the body are an example of CS that cause a support reaction [19–20].

In addition, there are possible SSs that cause follow-up reactions that are neither defensive nor supportive reactions. Moreover, it seems that it is not so much about accelerating and strengthening certain processes in the body, but about suppressing physiological blocks to their full course, for example, suppressing the growth of connective tissue, which is ahead of true regeneration.

The notion of follow-up reactions makes it possible to connect the concept of IM with the theory of functional systems in the interpretation of P.K. Anokhin. Indeed, any following reaction can be unambiguously associated with a functional system, the purpose of which is the complete realization of this reaction. The initialization signal of this functional system is the CS, which creates the corresponding virtual state of the organism, and diagnostics and therapy of this organism, from a technical point of view, are reduced to “switching on” (initialization) and “switching off” (deinitialization) of the corresponding functional systems [21].

4. METHODOLOGICAL APPROACHES TO THE OBJECTIVIZATION OF INFORMATION TRANSMITTED BY A CONTROL SIGNAL IN THE PROBLEMS OF THE SYSTEM INFORMATIONAL PHYSIOLOGY

The concept of virtual states of the organism and follow-up reactions caused by the SS allows one to significantly refine the idea of them. But, by itself, it is not sufficient to conduct correct physiological experiments and medical research. To provide the methodological apparatus of informational physiology, it is necessary to consider in more detail the concept of information transmitted by the CS, and to do this precisely taking into account the specifics of a correct experiment in the SIF or a clinical study in the IM.

In principle, there are four different approaches to the objectification of information transmitted by the CS, and, accordingly, 4 classes of correct experiments and studies that study the storage, transmission, assimilation and adaptation to information transmitted by the CS to a biological system.

1. In the first approach, which we will call semiotic, as of objective changes occurring in the human body or another biological system under the influence of US, the change in the indicators of electropuncture diagnostics or other systems of representation of the advanced display of reality by the body is considered. Within the framework of a vegetative resonance test (VRT), for example, it is possible to track the change in a set of test indicators from a fixed list with a predetermined testing method (VRT interface).

Consistent development of this idea leads to mathematical interpretation of the information transmitted by the control signal as a change in the measure of uncertainty of the "state vector" of the representative system, for example, a set of test indicators in the case of bioresonance therapy under ART (ART-BRT). In particular, it is possible to introduce the amount of algebraic information transmitted by the RS under the conditions of tracking (with the help of VRT-BRT) the dynamics

some ART interface of the body. This approach relies only on the results of formal testing of a certain group of ART test indicators or other, for example, biochemical indicators of the state of the organism. It is convenient when it is necessary to have numerical estimates of the measure of change in the state of the organism under the action of the ES. In particular, it is adequate in clinical trials of informational drugs or informational therapies.

At the same time, the semiotic approach does not include any (even hypothetical) assumptions about the mechanisms of the action of SS on the body. In particular, it does not allow one to predict the effect of an information preparation based on the method of its manufacture. All this significantly limits its applicability, at least at the current level of our knowledge.

Unfortunately, today the semiotic approach as a scientific methodology is practically not used in modern IM. This is despite the fact that, in fact, any article devoted to the positive results of treatment, for example, using ART-guided bioresonance therapy, uses this approach empirically. And it is the semiotic approach that is the key to the development of low-variability therapy algorithms that allow the use of evidence-based medicine methods to assess the effectiveness of MI methods [22].

Nevertheless, we note two applications of the semiotic approach developed to date, which can be considered the initial stage of its use:

- the solution of the problem unsolved over the previous two centuries algorithmic choice of a constitutional homeopathic remedy [23];

– development of a modular algorithm that allows a uniform method carry out therapy of outwardly completely different groups of diseases [24–26].

2. The second approach - semantic - essentially develops the original ideas homeopathy and consists in modeling the structure and direction of the adaptive response of the body depending on the message transmitted by the SS about the additional condition for self-fulfillment, under which it needs to continue its vital activity. This approach is based on the idea that the CS introduced into the body has a biologically significant content for this organism as an integral system, namely: this CS indicates how the body should adapt in order to continue self-fulfillment in the changed conditions of existence.

The disadvantage of the second approach is usually the impossibility to describe in detail the information about the "additional condition of self-fulfillment" contained in the RS, based on the description of the "native drug" used for its manufacture. That is, even having guessed how a given RS operates, in many cases we do not understand why it acts in this way and not otherwise.

The notion of resistance reactions as anticipatory reactions of the body's adaptation to a harmful additional condition for self-fulfillment, in the form of this or that damage, allows us to develop a number of new CSs of a "homeopathic" type of action. The pioneer of such developments in Russia is, apparently, O.I. Epstein, who, in particular, developed the concept of modifying the action of proteins in the body under the influence of potentiated SS

antibodies to them [6, 27–30].

Of the works in this direction carried out by the creative team of the IMEDIS Center, we note, for example, the obtaining and use of the US of proliferation of the growth of various cell tissues and structures, in particular fibroblasts [31], as well as the US of Syvstar, a hypothetical signal of resistance to premature aging, which makes it possible to at least test the intensity of gerontogenesis processes in the human body [32].

Another example of a semantic approach in IM is the search for CS that cause biologically expedient follow-up reactions that are neither protective reactions, nor supportive reactions. An example of such control systems are signals regeneration [33]. These are signals made by fixing (writing off) the US from regenerating animals - trepang, earthworm, newt and lizard. In accordance with the ideas about the mechanism of the follow-up reaction, such SSs can cause an increase and, moreover, a purposeful modification of regeneration reactions in the human body, and these ideas do receive some confirmation [24–26, 34]. Accordingly, we are talking about the organization of a more complete, more complete regeneration reaction from a morphological point of view, which can be a valuable addition to the well-known US of organ preparations.

3. In the case of the third approach, which we will call systemic physiological, we are only interested in those links of interaction between the information preparation and the organism, on which the assimilation of the SS directly passes into the adaptive reaction of the organism. Assume, for example, that some chemical substance is considered as the CS. Entering into chemical interaction with the substances of the body, this substance generates metabolic germ - a time-ordered change in quantitative and qualitative characteristics of all chemical reactions in which it participates, directly or indirectly up to its inactivation and removal from the body. A metabolic germ generated by a substance can be described in biochemical terms as the complete reaction of the body to the administration of that substance. The metabolic germ generated by a substance can be divided into two interacting but non-overlapping parts:

1. Firstly, these are reactions in which
administered substance or its metabolites. This part of the metabolic germ will be called its active part.

2. Secondly, these are reactions in which the administered substance or its metabolites are not directly involved, but which, nevertheless, are due to its ingestion into the body. In other words, biochemical reactions for which this substance is an information signal (to their occurrence, inclusion). We will call this part of the metabolic germ reactive or adaptive part of the metabolic germ.

An example of a metabolic germ, in which the division into active and reactive parts is clearly visible, is the process of producing antibodies in the body in response to the introduction of an antigen into it. With the development of the reaction to the antigen, antibodies are produced that no longer contain the introduced antigen. but

their very existence, as well as the chain of chemical transformations occurring with them up to their utilization and withdrawal, are entirely due to the fact of its introduction. If somehow the body's antibody-producing systems (for example, helper T-lymphocytes), it was possible to “convince” that a certain antigen was introduced into the body, then they would produce antibodies to it, despite its actual absence.

In "orthodox" medicine, it is believed that, without a chemical substrate, generating the active part of the metabolic germ, it is impossible to obtain its reactive part. Indeed, from any biochemical reaction, located in the reactive part of the metabolic germ, some chain of biochemical reactions must go to the active part of the germ. Therefore, for each biochemical reaction belonging to the reactive part of the metabolic germ, there must be such a "boundary" biochemical reaction that:

- the "preceding" reaction belongs to the active part of the germ (in it the substance that gave rise to the sprout, or its metabolites is involved);

– the “subsequent” reaction belongs to the already reactive part of the germ (the substance that gave birth to the sprout, or its metabolites do not participate in it).

Of course, in the general case, for a reaction from the reactive part of a metabolic germ, the existence of several “boundary” and, accordingly, “preceding” chemical reactions that lie in its active part is possible.

Further, the orthodox way of reasoning states that if the active part of the metabolic germ is empty (does not contain any biochemical reactions), then for any putative biochemical process in its reactive part there is no corresponding "preceding" reaction belonging to its active part. Consequently, there can be no reactions “boundary” to this biochemical process, which means that the reactive part of the metabolic germ is also empty.

The error in the above reasoning is that, in addition to the biochemical reaction, the phenomenon of generalized catalysis can act as a "preceding" biochemical process - a change in the rates of biochemical reactions in the body that occurs under the influence of a substance, but in which the substance in question (or its metabolites) is not directly involved . The phenomena of generalized catalysis can either mediate the transition from the active part of the metabolic germ to its reactive part, or generate metabolic germs without an active part. The latter include, in particular, all metabolic germs generated by sensory-perceptual signals introduced into the body, for example, images or texts.

We know that CS used in information medicine, in particular in ART and BRT methods, are not chemical substances. It is assumed that they are SPEMP, since their recording, storage and reproduction is provided by electronic equipment. Therefore, they certainly do not generate metabolic germs with a non-empty active part. How, then, can an adaptive response of the organism to SPEMP arise? From a biochemical point of view, US is a modulator of the rate of biochemical reactions in the body. It speeds up some reactions and slows down

the flow of others [6]. In turn, the acceleration or deceleration of reactions, the rate of which is affected by the US, causes the subsequent response in the form of launching "normal" biochemical reactions, which become "marginal" for the metabolic germ generated by the US. Such a metabolic germ obviously consists of one but non-empty reactive part. In order for the described mechanism of generating metabolic germs consisting of one reactive part to exist and be effective for self-regulation, it is necessary that a sufficient number of peculiar “transition locks” accumulate in the body during evolution. These are phenomena of acceleration or deceleration of certain “key” biochemical reactions, under the influence of which subsequent biochemical reactions are switched on and, ultimately, the entire reactive part of the metabolic germ. Each such “transition lock” (“key” biochemical reaction) is “unlocked”, that is, accelerated or slowed down, by its “transition key” - a certain SS or, perhaps, an SS from a certain group. "transition key"

Frequently mentioned in the literature devoted to the methods of ART and BRT, the concept of "biophysical level of control" means that the body has a sufficient number of biochemical reactions (the rate of which depends on the presence of certain CS) for the occurrence of advanced adaptation reactions sufficient for effective self-regulation of this organism.

The reactive part of the metabolic germ generated by the considered SS may turn out to be “similar” (close) to the reactive part of the metabolic germ generated by its “material prototype”. Thus, knowing the structure of the reactive part of the metabolic germ generated by a chemical, we also know the structure of the metabolic germ generated by the US obtained from it. At the same time, metabolic germs generated under the influence of US do not have an active part. Therefore, the effects on the body of a chemical substance and the US obtained from it, in the general case, can be completely different.

It is advisable to compare second and third approaches To description information content of the RS, which has a "material prototype". The reactive part of the metabolic germ of the "material prototype" (considered by the US) is the biochemical level of the description of the reaction of adaptation to its entry into the patient's body. In this case, the corresponding SS, introduced into the body, creates in it, figuratively speaking, the “illusion” of introducing the “material prototype of the SS”. The organism responds to this illusion with a certain reaction of advancing adaptation. In this work, these reactions are called non-equilibrium, since they lack the active part of the metabolic sprout. Note that the concept of a nonequilibrium adaptive response was first considered in Russia as early as 1994 [35].

We have the right to call the fourth approach the objective-physical one. Here us I am interested in the physical differences between an informational preparation - a carrier of a certain RS - from the same, but, from an informational point of view, “empty”

media on which no CA is "recorded". It means:

- a description of a physical experiment that would reveal "recorded" on a chemically neutral carrier US;

– description of an experiment that allows one to detect and recognize such a US, in in particular, to distinguish it from white noise or other signals similar to it.

In view of the special importance of objective physical, chemical and biological studies of US carriers, the authors propose to devote a separate publication to this area.

The four approaches described correspond, in essence, to the four stages of transformation of the information contained in the CS and its corresponding information preparation, when controlling the body with its help. The stages are listed in reverse order with respect to the "natural" sequence of transformation of this information in the process of controlling the state of the body.

CONCLUSIONS

1. The initial circle of concepts necessary for describing characteristic tasks of system information medicine, sufficient for modeling, conducting and interpreting the results of basic experiments in it, as well as building its basic systemic physiological models: informational resonance, control signal, virtual state of the body, follow-up reaction, representation of the acceptor of the result of this reaction.

2. Basic methodological approaches to the study of information have been developed, transmitted by the US, in the tasks of information medicine.

3. 4 basic approaches are identified, conventionally called semiotic, semantic, system-physiological and objective-physical approaches. Taken together, they describe the entire variety (or at least its known part) of manifestations of the control signal.

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