

Our Earth is surrounded by the magnetic field. Everything that is on the Earth, including people, animals and plants are exposed to invisible lines of force of this field. There is also a magnetic field in a human body, and in different organs it can be various. A healthy organism under normal conditions has a complete conformity and interaction of external and internal magnetic fields. Biophysics and doctors studying physiological processes occurring under influence of the magnetic field in human organism, first of all note the important influence of the magnetic field on system of circulation of blood, condition of blood vessels, activity of transferring of oxygen through blood to environmental tissues, transportation of nutrients through half-permeable membranes of cells. A sudden change of the external magnetic field, for example, through magnetic storm or active geomagnetic zone, always has negative effect for the man's health. However, surplus of the magnetic field is a temporary thing. Change that is more dangerous exists, namely - permanent lack.

Our century is characterized by rough development of engineering, creation of a plenty of metal machines, devices, structures. All this vast metal weight results in permanent wrong redistribution of the magnetic field. The metals draw the magnetic field to themselves, ruthlessly depriving people and animals of it. Permanent deficiency of the man's magnetic field and, as a consequence, infringement in work of various organs and systems of the organism is created. It is possible, that just the chronic deficiency of the magnetic field has put the frequency of cardiovascular diseases on the first place among all illnesses.

More than 50 years ago in Japan Professor of medicine, doctor Hakagava came to the conclusion which has entailed behind itself an opportunity of treatment of a large number of diseases. He described "syndrome of deficiency of the man's magnetic field", leading to formation of series of pathological processes.

The main manifestations of this syndrome are general weakness, undue fatigability, reduced serviceability, bad sleep, headache, pain in joints and backbone, pathology in cardio-vascular system, hyper- and hypotonia, dyspepsia, skin changes, problems of the prostate, gynaecological disfunctions and a number of other processes. However, it is obvious, that the insufficiency of the magnetic field is the only reason for the indicated diseases.

The current of blood in vessels results in formation of the magnetic field around them. As the vessels supply all parts of body with blood, that means that the magnetic field is everywhere in the organism. The reduction of the magnetic field in the environment results in infringement of the magnetic field in the circulatory system, therefore the infringement of the circulation of blood occurs; the transportation of oxygen and nutrients to organs and tissues is broken. The result of such processes is aggressive clinical behavior, ageing of cells and organism as a whole.

The deficiency of the magnetic field can quite compete to deficiency of vitamins and minerals.

Professor Serduk V.V. describes the action of magnetic fields on the human organism, on all kinds of diseases and traumas in the book "Magnetic therapy: the past, present, future". Reference book. Publishing house "Azimuth - Ukraine»,

2004. 264 candidate and doctor's dissertations, 230 monographies, 297 patents, 2850 articles have been investigated.

### **Effect of the magnetic field on human organism**

The magnetic therapeutic units MK are based on permanent magnets effect, having strength of 50 – 100 mTl, the type is travelling pulsed magnetic field» of certain direction and frequency combined with a motionless fixed permanent magnetic field.

The magnetic fields of "The Magnetic-therapeutic Units MK" improve circulation of blood by 300 %, normalize permeability of membranes, increase the oxygen saturation by 200 %, and it stimulates natural metabolism, promoting improvement of the human organism. Under influence of magnetic fields in ferments, nucleic acids, and proteins etc. charges and change of their magnetic susceptibility occur. In this connection, the magnetic energy of macromolecules can exceed energy of thermal movement, and therefore magnetic fields even in therapeutic doses cause orientational and concentrational changes of biologically active macromolecules that are reflected on kinetics of biochemical reactions and speed of biophysical processes. One of the important regulatory mechanisms in living systems is the activity of ions. It is defined, first, by their hydration and connection with macromolecules. By the action of magnetic fields, the components of system (ion - water, protein - ion, protein - ion - water) will make oscillatory movements, which parameters cannot coincide. A consequence of this process will be clearing of the part of ions from connection with macromolecules and reduction of their hydration, and consequently, increase of ion activity.

As for the degree of sensitivity of various systems of organism to the magnetic field the first place is occupied by nervous system, then comes endocrine system, organs of sense, cardio-vascular, blood, muscular, digestive, secretory, respiratory and osseous systems.

The effect of the magnetic field of «The Magnetic-therapeutic Units MK" on nervous system is characterized by change of behavior of the organism, its conditioned reflex activity, physiological and biological processes. It arises for the account of stimulation of inhibition processes that explains the occurrence of sedative effect and favorable action of the magnetic field on sleep and emotional pressure. The most acute reaction from the part of CNS is observed in hypothalamus, further follows the cerebral cortex, hippocampus, reticular formation of the mesencephalon. It partly explains the complex mechanism of the organism's reaction on influence of the magnetic field and dependence on the initial functional condition, first of all of nervous system, and then of other organs.

Under influence of magnetic fields of «The Magnetic-therapeutic Units MK» an increase of vascular and epithelium permeability occurs, which direct consequence is the acceleration of resorption of oedemas and injected medicinal substances. Due to the given effect, magnetic therapy has been widely applied at traumas, wounds and their consequences.

Under influence of the permanent magnetic field the amplification of metabolic processes in the area of bone's reclaim (by fracture) is observed, in earlier terms occur fibro - and osteoblasts in the zone of regeneration, the process of

formation of the bone takes place more intensively. Under influence of the magnetic fields, hypokoagulational effect arises at the expense of activation of anticoagulative system, reduction innervascular parietal blood clot formation and decrease of viscosity of blood by means of influence of magnetic fields of small intensity on fermentative processes, electrical and magnetic properties.

### **Application of the magnetic therapy.**

The list of magnetic therapy application areas is huge - treatment of arthritis, wound healing, restoration of the injured nerves, treatment of the syndrome of the channel carpus and headaches and many others, connected with infringement of functions on cellular level. The indications for application of magnets are different: headaches, migraine, atherosclerosis and cerebral vasospasm. Such painful symptoms, as giddiness, buzzing in the head quite often recede after rather a long use of magnetic means.

The bad memory is restored gradually. The Japanese researchers mark improvement of a condition of the patients with the disseminated sclerosis after influence of the magnetic field. Magnetic therapy of head can also be used at other rather difficult neurological processes, after cerebral thrombosis, and at neurosis and bad sleep.

Headache and other vascular problems of head are extremely frequently found. The located sites, such as neck, face, nervous structures suffer from deficiency of the magnetic field. At many pathological processes in these areas, magnetic therapy renders positive medical effect, for example, abates pain in the neck area at jugular osteochondrosis or radiculitis.

For strengthening of vascular effect of magnetic therapy, it is possible to use it in combination with circulator massage improving circulation of blood. The summation of two different mechanisms results in potentiation of the effect.

Magnetic therapy, certainly, is the important method of treatment of urogenital sphere diseases. First of all it concerns a problem with prostate. Its hypertrophy or adenoma often occurs. Younger men are more often to have prostate, i.e. inflammation of prostate. The listed infringements, as well as women cystitis, declare themselves with quickened day and nighttime urination or other pathological symptoms. In this case, magnetic therapy renders the most evident effect, restoring circulation of blood, liquidating oedema and inflammation of the organ.

Magnetic therapy is effective at lost of the men's potency when the reason is broken blood circulation in genitals. It happens at the inflammation of prostate, pancreatic diabetes, atherosclerotic changes of vessels.

### **The indications to medical application of the magnetic fields**

To kill the pain is the primary objective in usage of magnetic fields in medicine. The optimum use of permanent magnets is treatment of chronic pains (the chronic pain is persistent ache having the protracted character and not vanishing in 30 days). The ability of magnets to facilitate pain at heavy traumas or tem-

porary indispositions related to arthritis is amazing. Successful applications of magnets for resolving of haematomas and removal of inflammations accompanying plastic surgery are reported. Some people declare that the magnets, if to apply them correctly, can help 98-99 % of all the patients. Magnets must be used only in those cases, when the reason of pain is correctly diagnosed. One should remember, that the pain is a precautionary signal, which is necessary to consider. Do not try to treat the chronic pains, without consulting an experienced doctor. The magnets should not be used, if the reason of the pain remains obscure. The magnets should not be applied as replacement of medicines, which prove to be more appropriate or even simply necessary for the given case. You'd better think of magnets as of very useful helpers which allow to reduce consumption of drugs and thus to take to the minimum undesirable sides of the effects. The application of permanent magnets can considerably raise the endorphins contents in blood, organism's own sedative substances.

The magnetic field essentially improves blood stream in the smallest capillaries. For example, testing with the help of plethysmography (method of measuring of blood stream in fingers) the striking change was revealed - in 5 minutes the blood stream has increased by 300 %. It is considered, that the improvement of circulation of blood is related to the weakening of capillary walls and important changes in capillary channels, and with the subsequent weakening of muscles and conjunctive tissue. The capillaries are a key to reveal, how magnets facilitate pain by improvement of blood stream. Capillaries, much more narrow, than arteries or veins, are regulators of blood stream.

They are closed until there will not be a necessity to carry oxygen, dioxide of carbon and other exhaust products. Then they are made active. Blood stream in tissue is defined with a number of capillaries involved in it, just as consumption of water in common life depends on that, how many water taps are open.

When the walls of capillaries are weakened, it allows blood to flow more freely. The capillary changes help at pains due to acceleration of a liquid exchange in the injured tissue, at the expense of it the chemical substances causing pain and inflammation in this place are washed away. They include such undesirable collateral products as lactic acid, which is the main reason of pain and inflammation. The vital processes on the injured area become more effective, as soon as undesirable liquids are washed away from organism. The accelerated metabolism is found in most cases. "The Magnetic-therapeutic Units» do not only eliminate pains, but stimulate more rapid healing of the organism, as the movement of oxygen and other nutrients to cells is multiplied while capillary blood stream gets better.

Due to the rotation of permanent magnets with the certain positioning in "The Magnetic-therapeutic Units» the effect of travelling pulsed field creating the phenomenon of a magnetic induction is achieved. The complex of interaction of these phenomena causes increase of the level of oxygen in intercellular space by 200 %.

## Application

1. Diseases of cardiovascular systems: essential hypertension of the 1 degree; CHD with stable stenocardia of tension 1 FK; rheumatism; vegeto-vascular dystonia; post infarction cardio sclerosis.
2. Diseases and traumas of the central and peripheral nervous systems, trauma of spine, spinal cord; violation of spinal circulation of blood; transient violations of cerebral circulation of blood; ischemic cerebral strokes; osteochondrosis of spine; neuritises, polyneuropathy of different origin; neuralgias, neuroses, nervous breakdown, ganglionitis, causalgia, phantoms pains; paralyzes, paresises.
3. Disease of peripheral vessels: obliterating atherosclerosis of the 1-II-III stage; obliterating endarteritis of the 1-II-III stages, thromboangitis; Raynaud's syndrome; chronic venous insufficiency; thrombophlebitis of superficial and deep veins in a sub acute period; postthrombophlebitic syndrome; diabetic angiopathy, polyneuropathy; a state after aortic femoral shunting.
4. Disease and damage of the locomotorium: osteoarthritis deformans (but not in the phase of intensifying and remission); infectiously-toxic arthritises, polyarthritis of different etiology, bursitis, epicondylitis, periartthritis; the slowed down consolidations of crises, also by metal synthesis, presence of gipseous bandage or Elizarov's device; bruises, stretching of the capsular-ligament device, dislocations.
5. Disease of the bronchial-pulmonary device: sharp pneumonias of the protracted clinical course; chronic bronchitis, bronchial asthma (except hormone dependent); tuberculosis (inactive form).
6. Disease of the gastroenteric trust: stomach and duodenum ulcer in a phase of aggravation and remission; chronic gastritis, gastroduodenitis; sub acute and chronic pancreatitis; chronic hepatitis and protracted clinical course of acute hepatitis; biliary dyskinesia; chronic cholecystitis; chronic un ulcerous colitis; state after the resection of stomach on occasion of ulcer with the purpose of prophylaxis of post-resections complications.
7. ENT-PATHOLOGY: vasculomotor Ringo; chronic Ringo, rhinosinusitis; arthritis, sinusitis; chronic pharyngitis; chronic otitis; laryngitis, tracheitis
8. Ophthalmology : the sub acute and chronic inflammatory diseases of different environments of eyes: conjunctivitis, keratitis, iritis, iridocyclitis, will assure; atrophy of visual nerve; initial form of glaucoma.
9. Stomatology: parodontosis; gingivitis; ulcerous affectioneds of mucous membrane of oral cavity; mandibular joint; crises of the lower jaw; postoperative wounds and trauma. It is possible to nominate at presence of metal crown of tooth, dental bridge and splint in a cavity of mouth.
10. Sub acute and chronic diseases of urogenital system are cystitis; urethritis; pyelonephritis; adnexitis, metritis, prostatitis; epididymite, orchitis, vesiculitis; impotence; fruitlessness; climacteric syndrome; non-malignant neoplasm ( myoma, uterine fibroid tumor) taking into account age, hormonal background, dynamics of process.
11. Allergic and skin diseases: vasculomotor Ringo; bronchial asthma; psoriasis; neurodermatitis.

12. Trophic ulcer, languidly granulating wounds, burns, frostbites, bedsores, preoperative preparation and postoperative rehabilitation; peritoneal commissures; increase of immune status.

One of the most widely spread complaints is headache. Though there are many kinds of headache and set of reasons, causing it, the main reason of headache is the vasoconstriction of the circulatory system and deterioration of circulation of blood related to it. When blood stream is limited, there happens something similar to a case with twisting of a garden hose. It causes pain feelings. The narrowed site does not receive enough oxygen, therefore arises anoxaemia. Now many people working at the computers and within many hours sitting in one pose suffer from squeezing headaches. Neck muscles without appropriate rest are also under pressure. Such kinds of headache are well treated by influence of magnetic fields, which improve circulation of blood in the area of their effect.

Another kind of headache is migraine. It is considered, that at migraine vasoconstriction cerebrum with subsequent of their expansion occurs, that causes alimination of substances (neuropeptides), which result in increase swelling and inflammation.

#### **Postoperative pain.**

The influence of the magnetic field after surgical operation appreciably reduces haematoma and inflammation, and contributes to fast healing of tissues, patients observe the appreciable decrease of pain intensity after operation and the patients need less number of anaesthetics. For the majority of the patients the period of rehabilitation grows short by 50% and more, and it becomes possible due to the magnetic field improving blood supply of affectioned area, which in result is better supplied with oxygen and nutrients and is cleared from toxic exhaust products.

The magnetic fields are considered to make a great influence on set of processes proceeding in organism, including muscular-skeletal damages and wounds caused by surgical operations and traumas. Percent of success is approximately to 80 %, when actual complications are not observed.

#### **Traumas Pains.**

The traumas of muscles received during sport training happen constantly. Many sportsmen now are taunch supporters of magneto therapy. They consider the magnetic field especially useful to remove muscular spasmolysis. There are two main placings in magneto therapy: local, on an area of the reserred pain, and in acupunctural points. The local method lies in the magnetic field influence directly on the area, which is a source of pain. A typical example of reserred pain is the pain in knee at injured thurl. The theoretical substantiation of this method is, that while treating the injured area, for example, thurl, you do not receive such good results, than while treating area of synalgia, for example, knee. It is considered, that it is better to treat both areas at once.

#### **Technical maintenance of magneto therapy.**

The appropriate technical device predetermines the induction of this or that kind and forms of the magnetic field. A permanent magnetic field is received from the motionlessly installed permanent magnets of various size and form made from rare-earth metals.

The Units MK-1 and MK-2 are unique both in technical decision, and in breadth of clinical application with high therapeutic efficiency at their use for treatment of various diseases and pathological condition.

### **The recommendations for application**

1. Patient's state after operative interferences.

They include: cholecystectomy, appendectomy, hernioplasty, dissection of phlegmons, abscesses, phlebectomy etc. The unit MK-2 effects the operated part of body through a bandage by magnetic fields (depending on extent of the cut after operation), consistently moving a working part of it along a wound. Time of influence for one field is 10-15 minutes, course of treatment within 5 days, one procedure daily (fig. 1).

2. Myositis.

The installation effects on the patient in a position convenient for manipulation by the device during procedure. Consistently you will move a working part of the device along the whole area of a painful muscle. Time of influence is 10-15 minutes, course of treatment 5-7 days, one procedure daily (fig. 1).

3. Soft tissue bruise

The technique of influence is similar to that at myositis. Time of influence is 10-15 minutes, course of treatment for 3 - 5 days, one procedure daily (fig. 1).

4. Fracture.

The procedures are carried out in a patient's position, convenient for access to fields of influence, which are carried out cutaneously, through bandage both gauze-wadded, and plaster (fig. 1). The influence is in the area of a trauma. Time of influence for one field is 20 minutes through gipseous bandage, 10-15 minutes in other cases; a course of treatment 15-20 days, one procedure daily (fig. 1).

5. Osteoarthritis.

The procedures are carried out in position of the patient convenient for access to fields of influence of the appropriate joint. Fields of influence: shoulder joint: a front surface of the joint, under greater tubercle of humeri; the back surface of the joint, lower acromion process; elbow joint: area of elbow bend; radiocarpal joint: area of radiocarpal fold on-the-spot palm's joint; hip joint: the area of a projection greater trochanter of the thigh-bone on the buttock, middle of the inguinal fold; knee-joint: lateral surfaces on a projection of joint space, thus use simultaneously of two devices is possible; ankle-joint: back bend of foot on the projection of joint space; on interphalangeal joints the influence by the direct appendix of the working surface of the device is carried out on the proper joint. Time of influence for one field is 10-15 minutes, course of treatment 10 days, one procedure daily (fig. 9). At each procedure the treatment only of one joint is carried out. For pain releaf, time of influence for one field is about 20 minutes (fig. 1).

6. Arthritises.

The position of the patient and field of influence is similar to those at treatment of arthroses. Time of influence for one field is 10-15 minutes, course of treatment 10-15 days, one procedure daily (fig. 1).

7. Dermatitis. Dermatosiss. Skin itch.

The procedures are carried out in a position of the patient convenient for access to the fields of influence. The injured area up to 20 sq. cm is influenced by the unit MK-2 with a backlash of 0,5 cm from a working surface of the device up to the surface of skin; at the large surface of a pathological skin area procedure will be carried out by the unit MK-1 on the whole injured area, without contact. Time of influence for one field is from 10-15 minutes to 30 minutes depending on the area of the affected skin; a course of treatment from 5 days (at the skin itch) and about 20 days (at neurodermatitis, eczema), one procedure daily (fig. 1).

#### 8. Bronchitis (position 1.)

The Units MK-2, MK - 1 can help to cope with manifestations of bronchitis, bronchial asthma, pneumonia, ischemic illness, stenocardia and heart attack of myocardium, hypertensive illness neuroses and vegeto-vascular dystonia and to cure illness due to their unique medical action. Sedative, hypotensive anti-inflammatory, anti-swollen, antispastic and trophoregenerative effects are of the greatest importance among clinical manifestations of this influence. Under certain conditions magneto therapy has disaggregational and hypokoagulatory effect, improves microcirculation and local circulation of blood, favorably influences on immunoreactive and neuro-vegetative processes. For this purpose, it is necessary to adhere to the below-mentioned medical technique, having consulted the doctor in charge of the case before. Influence is made while the patient is sitting on a chair: field 1 - middle one-third of sternum, field 2 - middle of the interscapular area. Time of influence for the field is 10-15 minutes, course of treatment is 10 days, one procedure daily (fig. 2).

#### 9. Bronchial asthma.

The patient is influenced while sitting on a chair: field 1 - middle one-third of sternum, field 2 - middle of the interscapular area. Time of influence for one field is 10-15 minutes; course of treatment is 10 days, one procedure daily (fig. 2).

#### 10. Pneumonias.

The patient is influenced while lying on the middle third of sternum, middle of the interscapular area, area of a projection pneumonic heart thorax maximally close to the surface. Time of influence for one field is 10-15 minutes; course of treatment is 10 days, one procedure daily (fig. 2)

#### 11. Ischemic heart disease

The patient is influenced while lying on the back by one field on the area of heart projection on the front surface of thorax. Time of influence for one field is 10-15 minutes; course of treatment is 10 days, one procedure daily (fig. 2)

#### 12. Hypertensive illness

The patient is influenced while sitting on a chair on the area of the spinous sprout of the 7-th vertebra. Time of influence for one field is 10-15 minutes; course of treatment is 10 days, one procedure daily (fig. 2)

#### 13. Vascular-cerebral collapse.

The patient is influenced while lying on the back on the area of the spinous sprout of the 7-th vertebra. Time of influence for a field is 10 minutes; course of treatment is 10-15 minutes.

#### 14. Neuroses. Vegeto-vascular dystonia.

The patient is influenced while sitting on a chair if he has initially normal or enhanceable arteriotony. Time of influence is 10-15 minutes; course of treatment is 10 days, one procedure daily (fig. 2)

#### 15. Prostatitis (position 2.)

The unit MK-2, MK-1 can help to cope with manifestations of prostatitis, salpingo-oophoritis (adnexitis) and to overcome a pain due to its unique medicinal effect. Sedative, hypotensive anti-inflammatory, anti-swollen, antispastic and trofikoregenerative effects are of the greatest importance among clinical manifestations of this influence. Under certain conditions magneto therapy has disaggregational and hypokoagulational effect, improves microcirculation and local circulation of blood, favorably influences on immunoreactive and neuro-vegetative processes. For this purpose, it is necessary to adhere to the below-mentioned medical technique, previously having consulted with the doctor in charge of the case (fig. 3). Variant 1: They influence on the area of perineum between the root of penis and anus while the patient is lying on the back with lower extremities moved apart in knee arcuated or standing in the half-bent position with the permanent field placing like the first position. Fields are revolving towards the coccyx. Time of influence for the field is 10-15 minutes, course of treatment 10 days, one procedure daily (fig. 3). Variant 2; they influence while the patient is lying on his side, with the knees arcuated and pulled to the breast. A working surface of the unit is laid on the area of symphysis pubis on a middle line. Time of influence for a field is 10 minutes; course of treatment is 10 days, one procedure daily (fig. 3).

#### 16. Salpingo-oophoritis.

The patient is influenced while lying on his back in the area of the inflamed uterine appendages projection. Time of influence for one field is 10 minutes, course of treatment 10-12 days, one procedure daily (fig. 3).

#### 17. Stomach and duodenum ulcer

The projection area on the front abdominal wall of gastro-duodenal ulcerous defect is influenced with the field. A patient is lying on his back. Time of influence for one field is 10-15 minutes, course of treatment up to 40 medicinal procedures, two procedures per day during 20 days. The influence is carried out before food intake or in 1,5 - 2 hours after intake with intervals not less than 4 hours between procedures within a day (fig. 3).

#### 18. Thrombophlebitiss (position 3.)

The unit MK-2 can help to cope with manifestations of thrombophlebitiss and to overcome pain due to its unique medicinal effect. Sedative, hypotensive anti-inflammatory, anti-swollen, antispastic and trofikoregenerative effects are of the greatest importance among clinical manifestations of this influence. Under certain conditions magneto therapy has disaggregational and hypokoagulational effect, improves microcirculation and local circulation of blood, favorably influences on immunoreactive and neuro-vegetative processes. For this purpose, it is necessary to adhere to the below-mentioned medical technique, previously having consulted with doctor in charge of the case. They influence venous vessels through a naked body surface lengthways while the patient lying, from distant sites to proximal, covering the whole surface of injured vessels. Time of influence by one field

is 10-15 minutes, total time of influence for one procedure about 30 minutes, and course of treatment 10days, one procedure daily (fig. 4).

#### 19. Spine osteochondrosis with radicular syndrome (radiculitis).

The patient is influenced sitting on a chair by the localization of process in cervical and thoracic part of spinal cord or laying on a stomach by the localization of pathological changes in lumbar part of spinal cord, moving a working part of the device along the line of spinous process of vertebra. Time of influence by one field is 10-15 minutes at initial normal or high blood pressure of the patient. If a patient has low blood pressure time of influence on the neck area and initial thoracic part of spinal cord (to the third pectoral) is 10-15 minutes, in the other areas - 15 minutes. Movement of the vehicle at decompressed is from the top to the bottom. Course of treatment is 10 days, one procedure daily, position 4 (fig. 5).