

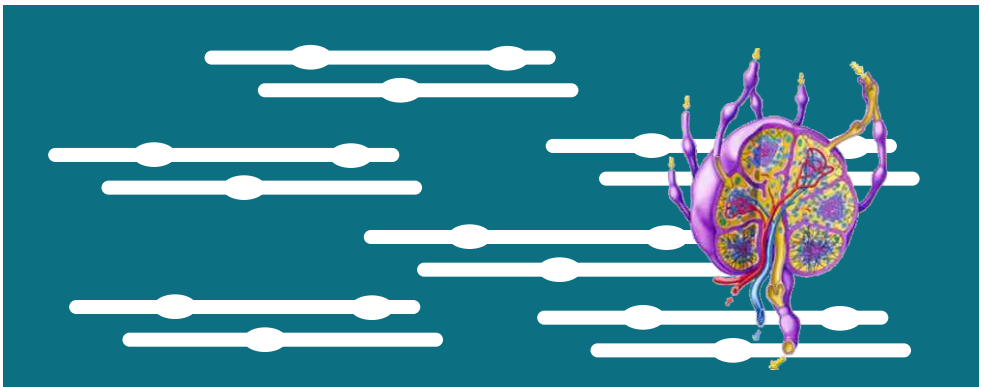


KYRGYZPATENT

STATE SERVICE OF INTELLECTUAL PROPERTY AND INNOVATION
UNDER THE GOVERNMENT OF THE KYRGYZ REPUBLIC

INNOVATIVE PROJECT

**ORGANISM CLEANSING AND HUMAN LIFE PROLONGATION
OR
NON-SURGERY METHODS OF DRAINAGE AN ORIFICE OF THE
LARGE LYMPHATIC COLLECTORS OF THE HUMAN, FOR THE
PURPOSE OF AN INTAKE THE LYMPH AND SUBSEQUENT
DIAGNOSIS AND TREATMENT OF THE BODY**





ЕВРАЗИЙСКАЯ ПАТЕНТНАЯ ОРГАНИЗАЦИЯ
ЕВРАЗИЙСКОЕ ПАТЕНТНОЕ ВЕДОМСТВО

ЕВРАЗИЙСКИЙ ПАТЕНТ

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«УСТРОЙСТВО ДЛЯ АСПИРАЦИОННОГО СПОСОБА ОБНАРУЖЕНИЯ
И КАТЕТЕРИЗАЦИИ УСТЬЯ КРУПНЫХ ЛИМФАТИЧЕСКИХ
КОЛЛЕКТОРОВ»

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2010年09月01日

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KYRGYZPATENT

STATE SERVICE OF INTELLECTUAL PROPERTY AND INNOVATION
UNDER THE GOVERNMENT OF THE KYRGYZ REPUBLIC

INNOVATIVE PROJECT

Organism cleansing and human life prolongation

or

Non-surgery methods of drainage an orifice of the large lymphatic collectors of the human, for the purpose of an intake the lymph and subsequent diagnosis and treatment of the body

Team:

- **Almaz Omurbaev**, Head of Anatomy Department in Medical Academy. PhD in Medical Science. Accomplishments, research & studies: Research into the Lymphatic System since year 1990 (estimate 20+ years)
- **Bolot Asanov**, Director (Scientific Technological Centre). PhD in Chemical Science.
- **Vitktor Vinogradov**, Chemistry Institute (National Academy of Science). PhD in Chemical Science. Nanotechnology development
- **Andrian Tokarev**, Field of Engineering and as Constructor (30+ years). Achieved numerous awards (during USSR period). Nanotechnology development.
- **Michael Sapin**, Academician of the Russian Academy of Sciences.

Production of the Lymph drainage catheter prototype has been funded by the State Service of Intellectual Property and Innovation under the Government of the Kyrgyz Republic (Kyrgyzpatent) in the amount of 800 000 soms, within a framework of the "Best Innovative Project - 2015"

INNOVATIVE PROJECT

Organism cleansing and human life prolongation

or

Non-surgery methods of drainage an orifice of the large lymphatic collectors of the human, for the purpose of an intake the lymph and subsequent diagnosis and treatment of the body

"Flushing out slag from the body" is a snappy tagline that must have stuck in the memories of the general public. For medical purposes such non-medical terms as "slag" and "flushing out" are not connected. We can cleanse the intestine or vessels. For commercial purposes the technical term "slag" may imply toxins, viruses, ghost cells and other wastes from human activity.

For easy understanding of our technology and its effects we will explain it in simple terms. Let us imagine a human organism as a mechanical system or a 60-80% liquid-filled ware (meaning intertissue liquid, blood, lymph and other). So, to ensure due operation of this mechanism (namely, a human organism) there exist two vascular systems. First one is a well-known blood vascular system delivering nutrients and oxygen to all organs. Second is a lesser-known lymphatic vascular system which is as yet little understood due to inaccessibility of lymph. If blood draw is simple, then lymph sampling requires a major medical operation, and this is what our project is focused on.

The lymphatic system plays a prominent role in removal of slag from the organism. Beginning at the tiptoes and fingertips the lymphatic system runs throughout the body amalgamating and increasing in diameter and flushes slag out from the organs. Then, running through the lymph nodes it removes slag from the lymph, and the latter flows into blood through the ductus thoracicus under the collar bone.

Our technology offers to inject a device (a catheter) into the ductus thoracicus for lymph sampling, its cleansing and reintroduction of the purified lymph into blood. Slaggy organism may cause failure of the lymphatic system and then lead to the following:

Cardiac insufficiency; renal insufficiency; hepatocirrhosis; peritonitis; pancreatitis; burns; alcoholic, alimentary or narcotic intoxication; gerontology

Therefore, our technology allows to draw, mechanically flush and purify the lymph leaving blood clean to effectively cleanse liver and kidney. Thus, we will reduce stress on liver and kidneys and stave off hepatocirrhosis and renal insufficiency.

This is just one among the many methods of application of our technology. It can also be used for prophylactic purposes. If a healthy person occasionally applies our technology he/she will avoid the above mentioned diseases, thereby ensuring prolongation of his/her life.

Considering the above and based on the worst-case estimates, at least, fifth part of the world population will apply our technology both for treatment and for prophylactic purposes. Flexibility and diversity of our technology makes us sure of the above anticipated figures. The lymph is what cleanse all the organs from slags, and if the lymphatic system fails, our technology will come useful. It is difficult to pre-estimate a multitude of people willing to prolong their lives and seeking to apply our technology for prophylactic purposes.

At the moment the technology is developed, patented and is at a prototype development stage what requires investment attraction. More detailed information will be provided in case of your interest.

The principal novelty of our scientific solutions is an innovative approach to the traditional method of lymph sampling, namely: complex surgical manipulation of lymph duct draining, originally transformed into affordable medical and paramedic procedure.

Originality of development results: no analogues and prototypes.

Results correspond to the proposed project: surpasses the previously known methods for surgical lymph sampling.

The drainage and lymph sampling is necessary for patients in the following cases:

- 1) For early diagnosis of cancer and treatment as well;
- 2) Cardiac insufficiency;
- 3) Renal insufficiency;
- 4) Hepatorenal insufficiency;
- 5) Hepatocirrhosis;
- 6) Peritonitis;
- 7) Acute pancreatitis;
- 8) Poisoning (food, alcoholic, narcotic);
- 9) Burns;
- 10) Atherosclerosis;

11) Gerontology.

Our technology can be used for the following purposes:

- a) In Emergency cases (removing critical intoxication);
- b) Using our technology as **Preventive** measure/

Application of our device for treatment of the following diseases:

Cirrhosis of the liver (alcoholism) and pancreatitis

The liver affected by cirrhosis may not be able to metabolize the waste products in the venous blood. Interstitial fluid accumulates in the abdominal cavity (ascites). Using our technology, that is, catheterization of the thoracic duct, all this liquid is expelled, and it improves the patient's condition.

Myocardial infarction

Myocardial infarction is a violation of the coronary circulation, which leads to necrosis of heart muscle tissue. Using our technology, that is, catheterization of the thoracic duct, swelling decreases, and degradation products (necrotic tissue) are removed from the myocardium, resulting in a more favorable course of myocardial infarction.

Oncology

Early prevention of metastasis of cancer cells.

With early catheterization of the thoracic duct the generalization of the tumor process in the early forms of cancer does not occur.

Burn

Breakdown products of tissue (necrosis) are absorbed and enter the extracellular space and eliminated through the kidneys. When burns are extensive, kidneys are failing and renal insufficiency occurs. The result of it is death.

Using our technology, that is, catheterization of the thoracic duct, interstitial fluid and breakdown products are removed. Thus, the toxicity and the load on the kidneys are removing.

Further the organism copes with the disease by itself.

Currently the inventors own:

5 patents of EAPO (The Eurasian Patent Organization)

2 patent of SIPO (The State Intellectual Property Office of the People's Republic of China)

1 PCT patent

There is no involved partnership in this project now. Our team is highly interested and looking for partnership with scientific institutes, scientists and investors.

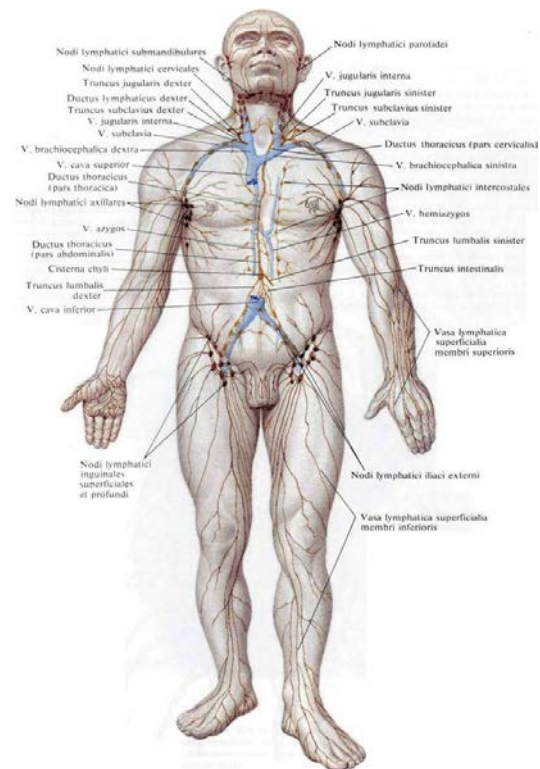
Anatomy of large lymphatic collectors

- The thoracic duct collects a lymph from the lower limbs, pelvis, retroperitoneal spaces, abdominal cavity, the left half of walls and organs of the thoracic cavity, the left upper limb and from the left half of neck and a head, i.e. $\frac{3}{4}$ of all lymph.

Runs into the left venous angle.

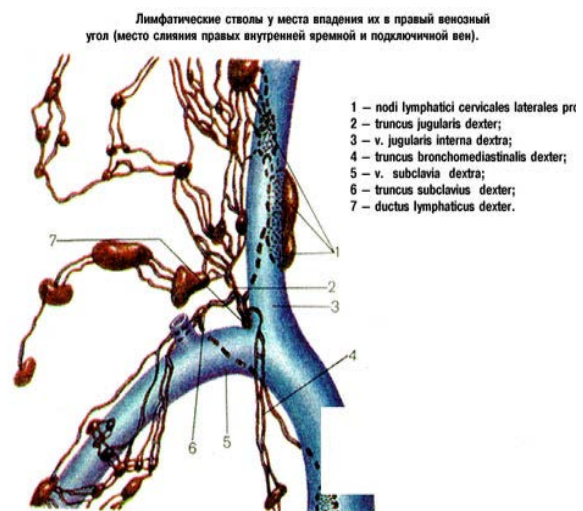
- The Right lymphatic duct collects a lymph from the right half of walls and organs of a thoracic cavity, the right upper limb, and from the right half of head and a neck.

Runs into the right venous angle.

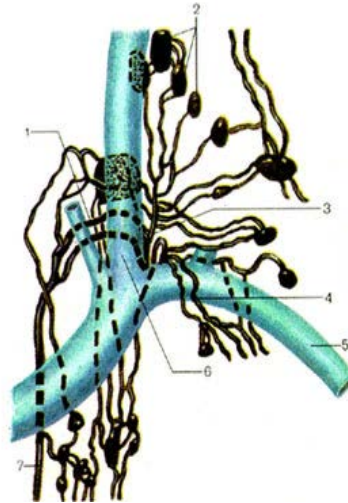


Confluence of entering point

- the right lymphatic duct - runs into the right venous angle



Грудной проток у места впадения в левый венозный угол
(место слияния левой внутренней яремной и подключичной вен).

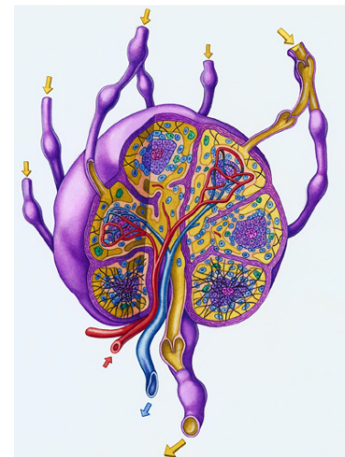


- 1 – arcus ductus thoracici;
- 2 – nodi lymphatici cervicales lateri;
- 3 – truncus jugularis sinister;
- 4 – truncus subclavius sinister;
- 5 – v. subclavia sinistra;
- 6 – v. jugularis interna sinistra;
- 7 – ductus thoracicus.

- the thoracic duct - runs into the left venous angle

The basic functions of lymphatic system

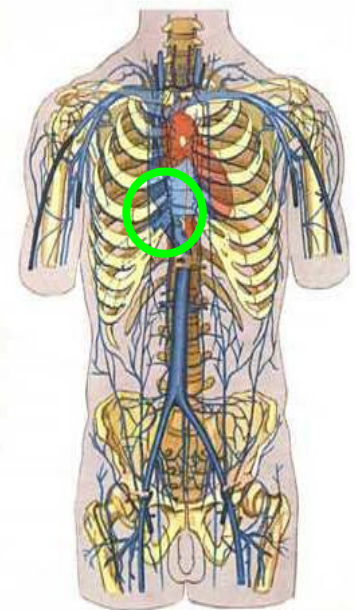
1. Conducting function is a carrying out of a lymph from organs and tissues in a venous system
2. Lymphopoiesis – formation of lymphoid cells
3. A barrier role - neutralisation of alien particles getting to an organism, bacteria, etc.
4. Cells of malignant tumours as extend on lymphatic ways for the account metastasing.



Essence of offered exploitation

the invention concerns medicine, namely to non operational (non surgical) methods of a intake of a lymph from a orifice of large lymphatic collectors.

- • the method is carried out by introduction in a orifice *of the left and right* venous angles through a brachial vein and external jugular vein **the device** of balloons **type**.
- • the increase of volume of a cylinder leads to combination of an external wall of a cylinder with an internal wall of venous angles that provides close contact of a orifice of lymphatic ducts to the design elements, for providing drainage of a lymph.



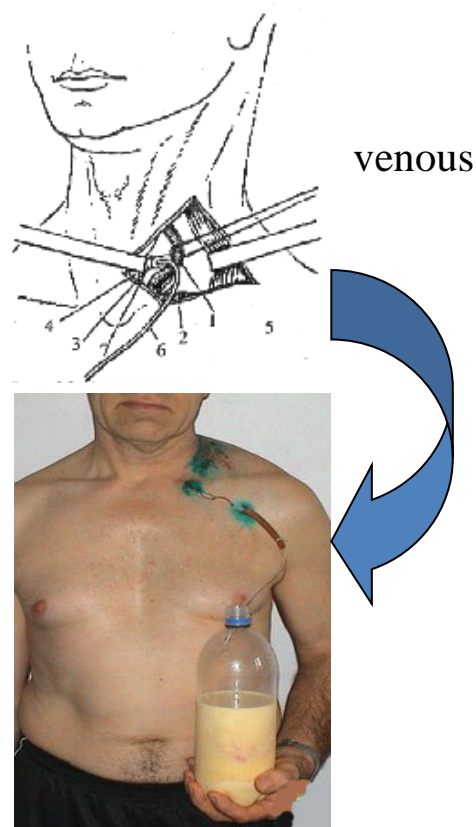
Areas of realisation of the project

- It is known, that not predicted processes metastasizing the majority of malignant new growths of organs and tissues of various areas of a body occurs mainly lymphagen way by which malignant migration of tumoral cells occurs inevitably through a orifice of the large lymphatic collectors informed with the general venous bloodstream.
- Thereupon, non surgical methods of a intake of the central lymph from a orifice of large lymphatic ducts gives the chance for long and dynamic supervision over its cellular structure (detection malignant cells), that is a new authentic method of diagnostics and forecasting of a current of tumoral process.
- Use of the given devices in clinical immunology allows to take from a lymph the cells of the lymphatic row in immunodepressing purposes.

- the offered device opens wide prospects in treatment of heavy pathologies of the surgical and therapeutic profile accompanied by a syndrome of the general intoxication of an organism.
- Such conditions as a peritonitis, a sharp pancreatitis, a cirrhosis, sharp alimentary (food, alcoholic, narcotic), etc. forms of poisonings, the terminal stage of heart, nephritic and hepato-nephritic insufficiency, burn illness, have a progressing current and frequently come to an end with a lethal outcome. At the heart of intoxication occurrence at the given pathologies process absorbing toxic substances in peripheral, then and in the central lymph - in large lymphatic ducts, and through a orifice of these formations in the general bloodstream. Thereof there is a generalisation of processes of an intoxication, the leader to heavy organic defeats of a brain that is the key reason of death in the given conditions.
- Offered devices allow to make intake of the central lymph with the subsequent clearing (sorbing) it from toxins, not breaking anatomic integrity of a chest channel, considerably facilitating conditions of the given patients.

Modern condition of researches and exploitation in the region of project realization

- It known the method drainage the thoracic ducts, consisting in surgical intervention in the region of the left angle, and cathetering the orifice of a thoracic duct.
- However known ways are difficult and labour-consuming in performance, and procedure cathetering a thoracic duct is interfaced to risk interoperating complications (bleeding) and postoperative complications (thrombosis, thromboembolism, lymphorrhea) as during surgical manipulations anatomic integrity of investigated organs is broken.



Novelty of the offered approach in comparison with the known

- Originality of results of working out: analogues and prototypes are not present.
- Non-surgery character (a way of a intake of the central lymph).
- Possibility of carrying out of the given procedure repeatedly also it is long, without damage of anatomic integrity of investigated organs.
- The Selective "aim" intake of a lymph from large lymphatic ducts, that considerably expands "spectrum" of application of our devices at different pathologies.
- The accessible medical manipulation which is carried out in out-patient conditions.
- Application of the given devices in the medical and diagnostic purposes.

Competitive advantages

- As, analogues and prototypes to our workings out are not present, the subsequent comparative characteristics of advantages and commercial characteristics predicted in the long term have approximate character, and the problem of competitive advantages in our opinion does not exist.

Commodity market

- Under our forecasts the sales volume only in the market of Russia (the markets of other CIS countries where our copyrights also are protected by patents) - will make about 10000000 pieces. At the cost price of ours catheter 20 USD profitability of our manufacture is obvious.
- Realisation of ours catheters is supposed through medical institutions of a various profile.

Condition and investment sources in project realisation

- Our project is at a stage of manufacturing of an experimental batch of samples (catheters). After end of this stage and pre-production model reception some medical institutes of Russia under the arrangement are ready to conduct tests and to carry out necessary procedures of certification.
- The batch production of our products is planned to adjust for territories of the Russian Federation and the CIS countries (Kyrgyzstan, Kazakhstan).
- Financial expenses of our project on present time were made at the expense of own means (research and development, patents, participation in conferences, symposiums and the publication).
- The Further financing of our project is planned at the expense of external investments. We also will consider a variant of participation of the investor in the authorised capital of the enterprise, for realisation of our project.

Organism Cleansing and Human Life Prolongation

Opinion

“Flushing out slag from the body” is a snappy tagline that must have stuck in the memories of the general public. For medical purposes such non-medical terms as “slag” and “flushing out” are not connected. We can cleanse the intestine or vessels. For commercial purposes the technical term “slag” may imply toxins, viruses, ghost cells and other wastes from human activity. For easy understanding of our technology and its effects we will explain it in simple terms. Let us imagine a human organism as a mechanical system or a 60-80% liquid-filled ware (meaning intertissue liquid, blood, lymph and other). So, to ensure due operation of this mechanism (namely, a human organism) there exist two vascular systems. First one is a well-known blood vascular system delivering nutrients and oxygen to all organs. Second is a lesser-known lymphatic vascular system which is as yet little understood due to inaccessibility of lymph. If blood draw is simple, then lymph sampling requires a major medical operation, and this is what our project is focused on.

The lymphatic system plays a prominent role in removal of slag from the organism. Beginning at the tiptoes and fingertips the lymphatic system runs throughout the body amalgamating and increasing in diameter and flushes slag out from the organs. Then, running through the lymph nodes it removes slag from the lymph, and the latter flows into blood through the ductus thoracicus under the collar bone. Our technology offers to inject a device (a catheter) into the ductus thoracicus for lymph sampling, its cleansing and reintroduction of the purified lymph into blood. Slaggy organism may cause failure of the lymphatic system and then lead to the following: Cardiac insufficiency; renal insufficiency; hepatocirrhosis; peritonitis; pancreatitis; burns; alcoholic, alimentary or narcotic intoxication; gerontology.

Opinion

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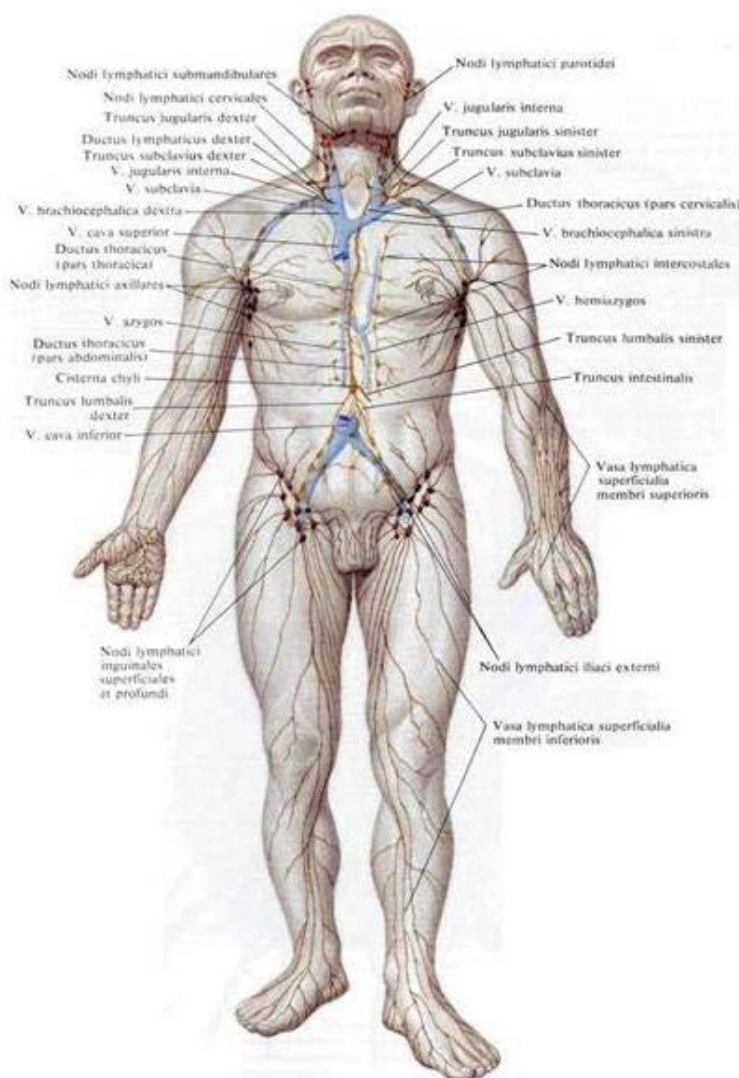
Therefore, our technology allows to draw, mechanically flush and purify the lymph leaving blood clean to effectively cleanse liver and kidney. Thus, we will reduce stress on liver and kidneys and stave off hepatocirrhosis and renal insufficiency. This is just one among the many methods of application of our technology. It can also be used for prophylactic purposes. If a healthy person occasionally applies our technology he/she will avoid the above mentioned diseases, thereby ensuring prolongation of his/her life. Considering the above and based on the worst-case estimates, at least, fifth part of the world population will apply our technology both for treatment and for prophylactic purposes. Flexibility and diversity of our technology makes us sure of the above anticipated figures. The lymph is what cleanse all the organs from slags, and if the lymphatic system fails, our technology will come useful. It is difficult to pre-estimate a multitude of people willing to prolong their lives and seeking to apply our technology for prophylactic purposes. At the moment the technology is developed, patented and is at a prototype development stage what requires investment attraction.

Lymph Drainage

1. What is Lymphatic System?

There are two vascular systems to consider in human body for proper operation: well-known blood vascular system delivering nutrients and oxygen to all organs and less known lymphatic vascular system, which is underexplored due to inaccessibility of lymph. If blood draw is simple, then lymph sampling requires a major medical operation, and our device solves these problems. For better understanding of Lymphatic system you can watch this video:

<https://www.youtube.com/watch?v=I7orwMgTQ5I&t=2s>



2. Functions of Lymphatic System

You can also think of the lymphatic system as the body's drainage system, working around-the-clock to clean up and properly dispose of waste left behind by other body systems. A healthy lymphatic system also contributes to many other major bodily functions, including:

a) **Drains fluid back into the bloodstream:** one of the lymphatic system's primary jobs is to collect excess fluid (particularly lymph fluid) surrounding the body's tissues and organs and return it to the bloodstream. If the lymphatic system did not drain excess fluid from the tissues, the lymph fluid

would build up in the body and cause swelling.

- b) **Filters lymph:** As lymph passes through the lymph nodes, white blood cells attack any bacteria or viruses found in the lymph. If cancer cells break away from a tumor,

The lymphatic system is a network of tissues and organs made up of lymph vessels, lymph nodes and lymph that drain lymph fluid (a fluid containing white blood cells, water, proteins, salts and lipids) from all over the body.

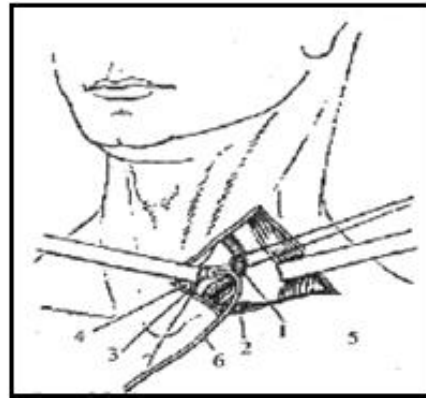
There are lymph nodes under your arm (in your armpit), in each groin (at the top of your legs) and in your neck, in your abdomen, pelvis and chest. Other lymphatic body organs include your spleen, thymus gland, tonsils and adenoids. When functioning well, the lymphatic system helps keep the body's needs in balance, but when things go wrong, disorders and cancer can result.

they can attach to the nearby lymph nodes. That is why doctors check the lymph nodes first when determining how far a cancer has spread.

- c) **Filters the blood:** the spleen filters blood, removing old red blood cells and replacing them with new ones cells produced in the bone marrow.
- d) **Removes toxins and other impurities** from the body, such as carbon dioxide, sodium and other byproducts of cellular feeding on oxygen, minerals and nutrients. The system helps to remove these impurities and dispose of them through perspiration, bowel movements, urine and your breath.
- e) **Fights infection:** helps to defend the body against illness-causing germs, bacteria, viruses and fungi. The system builds immunity by making special white blood cells (called lymphocytes) that produce antibodies, which are responsible for immune responses that defend the body against disease.

3. **The Invention: Existing method of drainage**

As was mentioned above existing lymph drainage method is a surgical intervention of the left venous angle and drainage of the orifice of a thoracic duct. It is complex and labor- consuming operation, which violates anatomic integrity, followed by postoperative complications (thrombosis, thromboembolism, lymphorrhea).



4. The Invention: new technology consists of the following components:

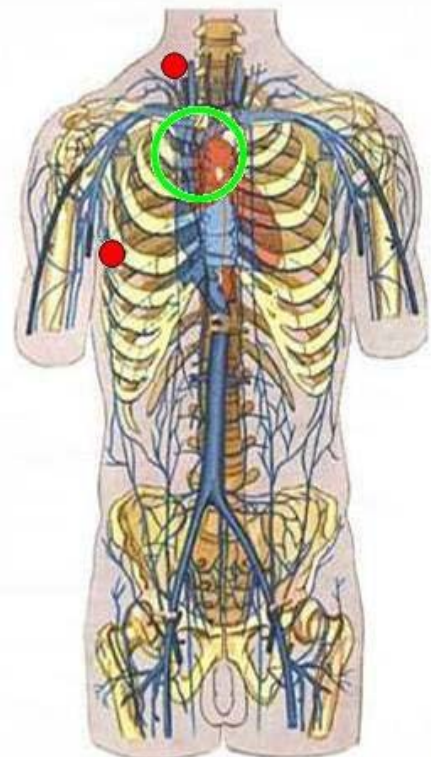
- a) New non-surgical opening method of large lymphatic collectors
- b) Catheter for detection and opening of a large lymphatic collector

Our technology offers to inject a device (a catheter) into the ductus thoracicus for lymph sampling, clean the sample (already existing method) and inject back the purified lymph into the blood. Therefore, our technology intakes, mechanically purifies the lymph leaving blood clean for effective cleanse of liver and kidney.

The Invention - non-operational (non-surgical) methods lymph intake from large lymphatic collectors.

Method is carried out by injection in a orifice of the left and right venous angles through a brachial vein and external jugular vein the device of balloons type.

The increase of volume of a cylinder leads to combination of an external wall of a cylinder with an internal wall of venous angles that provides close contact of a lymphatic ducts to the elements of the catheter, for a lymph drainage.



- a) Allows early diagnosing of the person state of health
- b) Allows multiple draining of the lymph for continuous monitoring and treatment of the patient over time without surgical intervention.
- c) Possibility of carrying out of the given procedure repeatedly for a long period, without damage of anatomic integrity of large lymphatic collectors.
- d) There are no analogues and prototypes.

The drainage and lymph sampling is necessary for patients in case of:

- a) For early diagnosis of cancer and treatment;
- b) Cardiac insufficiency;
- c) Renal insufficiency;
- d) Hepatorenal insufficiency;
- e) Hepatocirrhosis;
- f) Peritonitis;
- g) Acute pancreatitis;
- h) Poisoning (food, alcoholic, narcotic);
- i) Burns;
- j) Atherosclerosis;
- k) Cosmetically procedures (cellulite)
- l) Gerontology;
- m) While transplantation of organs;
- n) Effect of body squeezing (earthquakes);
- o) In emergency cases (removing critical intoxication)
- p)

Examples of technology's application:

Cirrhosis of the liver (alcoholism) and pancreatitis - the liver affected by cirrhosis may not be able to metabolize the waste products in the venous blood. Interstitial fluid accumulates in the abdominal cavity (ascites). Our technology (catheterization of the thoracic duct) expels all this liquid, improving the patient's condition.

Myocardial infarction leads to necrosis of heart muscle tissue. Our technology decreases swelling and removes degradation products (necrotic tissue) from the myocardium, resulting in a more favorable course of myocardial infarction.

Oncology - process of cancer cells metastasis is unpredictable and migration of malignant growths and tissues into various areas of body occurs mainly through the lymph. Early catheterization of the thoracic

duct leads to prevention of cancer cells metastasis and generalization of the tumor process in the early forms.

Therefore, non-surgical method of lymph drainage gives the chance for long and dynamic supervision over malignant cells detection, which is a new authentic method of diagnostics and forecasting of tumoral process.

Burn - breakdown products of tissue (necrosis) are absorbed, enter the extracellular space, and eliminated through the kidneys. When burns are extensive, kidneys are failing and renal insufficiency occurs, which leads to lethal outcome. Our technology allows removing interstitial fluid and breakdown products, so the kidneys are safe from toxicity and overload. Use of the given devices in clinical immunology allows drainage in immunodepressing purposes.

In order to avoid above-mentioned diseases healthy people will also apply our technology as prophylactic measure, ensuring prolongation of his/her life. Our technology will be in demand of physicians, oncologist, surgeon, toxicologist, immunologist and others.

5. What has been done? Studies of anatomical difference in body structure, measurement of all possible sizes, diameters of veins of the thoracic duct and various parameters. Physical tests carried out on dead bodies of animals and cadavers.

6. Conclusion: The invention allows safely collect lymph multiple times in a person's life), for:

- Diagnose
- Treatment of illness
- Healing of hopeless patients (at least decrease their suffering and extend their life. Ex.

If 2-4 months of life left, lymph cleansing will increase this period.

- Extension of human's life
- Cosmetology (cellulite)
- Continuous periodical monitoring
- Preventive measures

There is no involved partnership in this project now. The technology is patented and in process of prototype development, that requires investment. Financial expenses of our project for now were made at our own expenses: (research and development, patents, participation in conferences, symposiums and the publication).

7. Roadmap: In case, we receive funding:

- Materials n manufacture (catheters) – **6 months**
- Test on animals (if necessary) – **4 months**
- Test of prototypes in hospital – **6 months**
- Analysis of clinical-experimental data – **2 months**
- Introduction of catheters in clinical practice
- Program for diagnostic and treatment

Testing: location is optional

- Location, Republic of Kyrgyzstan
- Fabrication of catheters and devices
- Hospital and facility (utilization)
- Accommodation, travels, office and services
- Test period to completion (18 months)

Clinical test: Development of prototypes (animal testing) in Kyrgyzstan

- Research of anatomic features of animal's large lymphatic collectors
- Works on test of development prototypes of catheters in hospital of reconstructive surgery
- Development of catheterization technique of large lymph collectors in the inpatient and outpatient conditions
- Development of equipping issues for performing the catheterization
- Work on introduction of catheters in clinical practice
- Planned diagnostic and treatment works with use of licensed catheters in hospitals in Kyrgyzstan; or other place
- Introduction of catheters into the practice of abdominal surgery
- Introduction of catheters into the practice of thoracic surgery
- Introduction of catheters into the practice of toxicology and drug treatment

8. Future studies: Development prototype of catheters on cadaveric;

- Researches of morphological parameters of the architectonics of right and left venous angles in people of different body types
- Investigation of morphometric parameters of the architectonics of right and left venous angles in individuals of different sex
-

9. Potential Market: Approximately fifth part of the world population will apply our technology both for treatment and prophylactic purposes. The lymph is what cleanse all the organs from slags, and if the lymphatic system fails, only our device will provide real solution. It is difficult to pre-estimate the amount of people willing to prolong

their lives using our technology for prophylactic purposes. There are no analogues and prototypes.

Here is some statistics of diseases, where our technology is applicable:

- **Cancer** - early diagnosis and treatment; - in 2012 there were 14.1 million new cancer cases and 8.2 million cancer deaths worldwide.
- **Cardiac insufficiency** – 25 million **patients worldwide (2015)**
- **Renal insufficiency** - 10% of the population worldwide is affected by chronic kidney disease (CKD), and millions die each year because they do not have access to affordable treatment
- **Cirrhosis** - 29 million people in the European (EU) region suffered from a chronic liver condition² and more than 30 million Americans had liver disease in 2013
- **Poisoning (food, alcoholic and narcotics)** - caused by 31 agents – bacteria, viruses, parasites, toxins and chemicals – states that each year as many as 600 million, or almost 1 in 10 people in the world, fall ill after consuming contaminated food. Of these, 420 000 people die, including 125 000 children under the age of 5 years.
- **Burns** - An estimated 265 000 deaths every year are caused by burns (2016)
- **Atherosclerosis** - More than 15,800,000 Americans have known coronary artery disease. About 8 million of them have had heart attacks. Around 500,000 people will die of coronary artery disease this year. More than a million will have a heart attack.

We have provided some statistics on potential markets, which we could gather on a short notice, although it is obvious that the markets for our device are tremendous. Currently an estimated cost of the device production is approximately **100\$**. Retail price is yet to determine.

Here are some examples of retail price for high-end catheters:

- Foley catheter is **1250 \$** - flexible tube that is passed through the urethra and into the bladder to drain urine. It is the most common type of indwelling urinary catheter.
- Redona catheter is **2755 \$** – drainage for wounds
- Duodenal catheter is **737\$** – for intubation Duodenal

These catheters have different purpose, but each has only one. They have many competitors and are not exclusive on the market. Our device has wide range of applications and no analogues/competitors, so the retail price will probably be higher than catheters mentioned above.

10. Patents and achievements:

- 5 patents of EAPO (The Eurasian Patent Organization)
- 1 patent of PCT
- Golden Medal and diploma of the 5th International Salon of Innovations and New Technologies. Ukraine, 2009.
- Golden Medal and diploma of The Eurasian Patent Organization, Moscow, 2009.
- Finalist of 9th Contest of Russian innovations, Moscow, 2010.
- Grand Prize and certificate of World Intellectual Property Organization (WIPO), Geneva, 2010.
- Participant of the World Expo 2010 Shanghai, 2010.



Награждается

Научно-технический центр



Проект «Разработка неоперационных способов дренирования устья крупных лимфатических коллекторов человека с целью забора лимфы, последующей диагностики и лечения онкологических заболеваний»



WIPO AWARD FOR INNOVATIVE ENTERPRISES

Academician U.Asanov's Public Foundation
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is hereby awarded
FOR ITS ACTIVE USE OF INTELLECTUAL PROPERTY FOR
INNOVATION ACTIVITY

Presented at the
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Organized by
The National Academy of Science Kyrgyz Republic – Technopark of
the National Academy of Science

Bishkek
November 3 – 10, 2010

Francis Guiry
Director General
WIPO

Certificate No. CN 667200

Patent Certificate for Invention

Title of the Invention: THE DEVICE FOR LYMPHATIC SEPARATION

Inventor: Bolot Usenovich ASANOV; Mihail Romanovich SAPIN;
Almaz Sagyndyevovich OMURBAEV

Patent No.: ZL 200610099583.3

Filing Date: 2006-8-1

Patentee: BOLOT USENOVICH ASANOV

Granting Date: 2010-9-1

After examination pursuant to the Patent Law of PRC, the State Intellectual Property Office of the PRC makes a decision to grant the patent right for invention, issue the certificate of patent for invention, and register and announce it. The patent right for invention shall take effect as of the date of the announcement.

The duration of the patent right shall be twenty years, counted from the date of filing. The patentee should pay renewal fees according to the Patent Law of PRC and its implementing Regulations. The time limit for payment of renewal fees is within one month before 8-1 of each year. Where the renewal fee is not paid within the time limit, the patent right shall lapse from the expiration of the time limit within which the renewal fee should be paid.

The Patent Certificate records the legal status when the patent right is registered. Any transfer of patent right, inheritance, invalidation, termination of patent right, restoration or the change of the name, nationality or address of the patentee related to the patent will be recorded in the copy of the patent register.

President: Lipu TIAN

2010-9-1

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