**VNIITU-1 CARBON HEMOSORBENT**

*Description*
VNIITU-1 mesoporous carbon hemosorbent (chemically pure with a carbon content not less than 99.5 %) is produced on the basis of dispersed carbon – a product of the thermal decomposition of hydrocarbon materials of petroleum and carboniferous origins and natural gas. The sorbent granules 0.5-1.0 in size mm have a smooth surface and a spherical shape and practically do not contain dust. This ensures increased blood compatibility, inertness to the blood corpuscles, and good sorption dynamics. The hemosorbent exhibits high adsorbing capacity with respect to medium-molecular-weight toxins. The presence of micro and macropores on the sorbent surface enables low- and high-molecular-weight compounds to be removed from blood.

*Technical specifications*
Physicochemical and medicobiological characteristics of VNIITU-1 carbon hemosorbent:
- Total pore volume, cm$^3$/g: not less than 0.4
- Specific surface for CTAB adsorption, m$^2$/g: 65-125
- Hardness of granules in grinding, % per minute: not more than 0.30

Effects on the blood corpuscles at a blood feed rate of 80-120 ml/min per 350cm$^3$ of the sorbent:
- Decrease in leukocyte count, %: not more than 10
- Decrease in thrombocyte count, %: not more than 15
- Increment in free hemoglobin, %: not more than 6
- pH of the sorbent: 6.0-7.8
- Sterility: is sterile (subjected to steam sterilization at 120°C for 45 min)

The hemosorbent is nontoxic and antipyrogenic.

*Technical appraisal and economic benefits*
In comparison with known home-made and foreign analogs, the material is distinguished by high chemical purity and high mechanical strength of granules, an almost complete absence of dust, and standardization.

*Application areas*
VNIITU-1 hemosorbent is effective as a means for blood detoxification:
- in acute toxicosis (industrial and household poisons, medicinal drugs, fungal toxins, and organophosphorus compounds);
- infectious diseases (meningococcosis, viral hepatitis, tuberculosis);
- endoxemia (peritonitis, sepsis, burn disease, etc.);
- liver and kidney diseases (acute renal and hepatic failure, chronic kidney insufficiency, hepatic and renal coma and recoma, and biliary and diffuse nodular cirrhoses);
- autoimmune diseases and dermatoses (psoriasis, lupus erythematosus, proliferative arthritis, bronchial asthma, allergoses);
- psychoneurological diseases (alcoholism, schizophrenia, narcomania, epilepsy).

*Development stage*
Batch production of VNIITU-1 hemosorbent was launched at the Institute of Problems of Hydrocarbon Processing, SB RAS. A federal license for the production, storage, and sale of the
product was issued.

**Patent situation**
The development is protected by a Russian Federation patent.

**Commercial offers**
Delivering VNIITU-1 hemosorben t in standard 250- and 450-cm³ bottles containing, respectively, 200 and 350 cm³ of the adsorbentin sterile form.

**Estimated cost**
The estimated cost of VNIITU-1 hemosorbent is 305 rubles per a bottle.

**Contacts**
Institute of Hydrocarbon Processing, Siberian Branch of the Russian Academy of Sciences
54, Neftezavodskaya St., Omsk, 644040, Russia.
Phone: (3812) 67-26-16
Fax: (3812) 64-61-56
E-mail: rashida@incat.okno.ru