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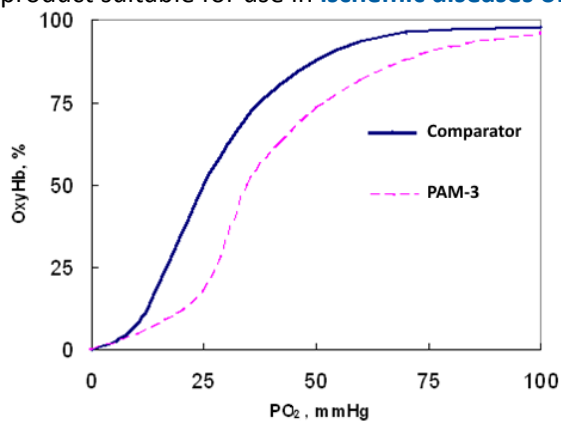
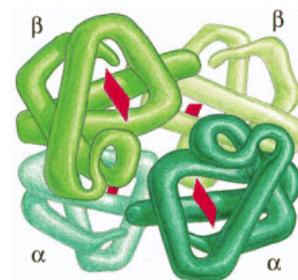
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Dear colleagues,

This month we would like to present to your kind attention our project, called PAM-3 “Haemoglobin-based Oxygen Carrier”. PAM-3 is an original pharmaceutical product, a blood substitute, which loads oxygen in lungs, transports it through capillaries and unloads in tissues and organs.

The project activities started in 2007. Since then, we have developed a unique method of pure hemoglobin isolation, worked out pilot technology of PAM-3 production and completed preclinical studies. Currently, the documents have been submitted to the Ministry of Health of the Russian Federation to get approval for the **phase I** clinical trial.

There is a potential to expand PAM-3 therapeutic indications after the product registration: preclinical studies showed that the product has hemostimulatory effect in moderate hemosuppression induced by radiation or administration of cytostatic agent. Therefore PAM-3 may be used for treatment of **oncological patients** under chemo- and radiation therapy, and patients with severe infectious diseases accompanied by **anemia**. Due to small size of PAM-3 molecules (hundreds of times smaller than erythrocytes), the product may freely overcome vasoconstriction areas and provide oxygenation of body organs and tissues with insufficient blood supply. This makes the product suitable for use in **ischemic diseases of heart** and other organs.



Oxygen-hemoglobin dissociation of PAM-3 and polymerized human hemoglobin by glutamic acid (comparator) at T=37°C and pH=7,4, i.e. in settings consistent with human body

The product may be used in emergency stations, traumatology, during surgeries accompanied with large blood loss. PAM-3 may become essential in emergency situations and be included to **state reserves** (Ministry of Defense, Ministry for Emergency Situations) in the event of war, terror attacks and accidents. The product may be also used in **veterinary medicine**.

PAM-3 has several advantages in comparison with red blood cell mass:

- does not require iso-serological selection by blood groups, rhesus factor and other antigens;
- has longer shelf life;
- convenient for shipment and use in field conditions;
- significantly reduces risk of transmission infections and post-transfusion complications.

The study on general toxic action has shown that the product is low toxic and well tolerated by animals (LD₅₀ = 30 g/kg).

Project IP: 10 patents and 1 patent application.

The following organizations became our **partners**:

- “Russian Cardiology Research-and-Production Complex (FSBI RCRPC) of the Ministry of Health of the Russian Federation, Laboratory of Drug Toxicology;
- FSBI “Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry” (IBCh) of the RAS (Branch).
- A. Tsyb Medical Radiological Research Centre (MRRC) - branch of Federal State Budgetary Institution “National Medical Research Radiological Centre” of the Ministry of Health of the Russian Federation, Radiation Pharmacology Laboratory.
- State Scientific Institution “Institute of Molecular and Atomic Physics of the National Academy of Sciences of Belarus” (IMAP NAS of Belarus).

The activities within the project **“Card-Info”** are ongoing. Card-Info is an express-test for early diagnostics of acute myocardial infarction. The more detailed information will be presented in the next Digest.

Best regards,
Roziyev Rakhim