USE OF XENON IN MEDICINE

V. N. Potapov and I. P. Kolesova

Results are provided for clinical testing of xenon produced under the trade mark XeMed. Production conditions are developed for manufacturing twelve respiratory treatment gas mixtures based on xenon, oxygen, argon, helium, nitrogen, krypton, and other gases.

Akela-N company was formed at the end of 1990 with the aim of creating within Russia a highly efficient multi-purpose producer of rare and inert gases of high purity: krypton, xenon, neon, and gas mixtures based on them for various branches of the national economy. Ten years ago, workers of Akela-N developed a unique technology for purifying technical grade xenon with the aim of its application in medicine.

Clinical tests on medicinal xenon produced by Akela-N under the trade mark XeMed have been carried out, and also many years of experience of using xenon in extensive medical practice have shown not only its high efficiency and safety as an anesthetic, but opened a spectrum of indications for applying xenon as a multipurpose means of treatment.

In contrast to other artificially created anesthetics, xenon as a natural noble gas is safe for humans. Arousal of a patient after narcosis sets in after 2–3 min with complete recovery of consciousness without any subsidiary complications. Clinical use of the preparation XeMed in anesthetics for more than 5000 patients has confirmed the presence of cardio-neuro-radio protector and immunostimulation properties of xenon.

Akela-N, being the sole producer in Russia of medicinal xenon, continues to study the effect of xenon on the human organism and to look for its potential applications in medicine.

Recently the enterprise has developed production conditions for manufacturing twelve named respiratory treatment gas mixtures (RTGM) based on xenon, oxygen, argon, helium, nitrogen, krypton, and other gases. Many types of RTGM have undergone preclinical studies and demonstrated splendid results in clinical tests in the leading medical centers of the Russian Academy of Sciences and the Russian Academy of Medical Sciences.

Within the structure of Akela-N there is a gas analytical laboratory that performs monitoring of the quality of the gas and gas mixtures produced in the enterprise; chromatographic analysis of macro- and microimpurities, present in raw materials entering processing; development of new measurement procedures; research work is carried out according to a plan for developing the enterprise and according the requests of other organizations.

For many years of faultless testing of the laboratory in the field of creating and studying medicinal gases and respiratory treatment gas mixtures the laboratory has been accredited by Gosstandard of Russia for the area “Quantitative chemical analysis of gases for medicinal purposes.”