Abstract

Free radicals are essential part of common physiological metabolic processes in the organism. They are involved in the protection of the organism from heterogeneous elements, participate in many chemical reactions, serve as substrates for a numer of enzymes, have a signal function, mediate vasodilatation and also participate in reproduction. However all these functions must be under continous and strict control of antioxidant mechanisms because free radicals are also highly reactive substances. Failure of antioxidant control mechanisms can give rise to or at least contribute to serious damage of genetic information, molecules, tissues or regulatory mechanisms. The purpose of antioxidant protection of the organism is to counteract the negative effect of free radicals, even during and ongoing disease. The system is extremely complex, its individual components cooperate and sometime are in synergy with one another. The overproduction of free radicals can participate in the pathogenesis of many diseases of the respiratory system (for example: COPD, asthma bronchiale, ARDS, lung cancer). In the treatment of the diseases with suspected overproduction of free radicals, antioxidants may also be administered during therapy. To achieve good results, exact assessement of the actual condition of the organism seems to be necessary. At the same time, it is important to take into account the complexity of antioxidant action leading to the restoration of the oxidant-antioxidant balance. However, the important information are still missing. The oxidant-antioxidant system and the possibilities of redox balance maintenance are subjects of intense investigation.