Interaction of bioactive indole derivatives with α-hydroxyethyl radicals

R. L. Sverdlov, S. D. Brinkevich, O. I. Shadyro
Belarusian State University, Minsk, Belarus, e-mail: swerdlov@mail.ru

Protection of human organism from the effects of ionizing radiation acquires importance from the perspective of national nuclear programme development and expansion of non-nuclear uses of ionizing radiation. Radiation protective properties of compounds are mainly attributed to their ability to inhibit free radical processes. It was shown earlier [1], that indole derivatives exert radioprotective properties. In the present work interaction of pyrrole, indole, serotonin, melatonin, harmane, harmine, harmaline with α-hydroxyethyl radicals (α-HER) was studied by means of steady-state radiolysis and material initiation methods. Low reactivity for pyrrole, indole and melatonin towards α-HER was revealed. It was established, that serotonin, harmane, harmine, harmaline are able to oxidize α-HER. Experimental and computational methods indicate the increase in oxidative properties in the row: harmine–harmane–harmaline.

References

1. V. G. Vladimirov, I. I. Krasilnicov, O. V. Arapov. *Radiation protectors: structure and functions.* Ed. by V. G. Vladimirov. Kiev. (1989) 264 (in russ).