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Protective effect of histidine on para-nonylphenol enhances 1-methyl-4-phenylpyridinium ion-induced hydroxyl free radical generation in rat striatum**Toshio Obata**

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The present study examined the antioxidant effect of histidine, a singlet oxygen (1O_2) scavenger, on para-nonylphenol, an environmental estrogen-like chemical, enhances 1-methyl-4-phenylpyridinium ion (MPP⁺)-induced hydroxyl radical ($\bullet OH$) generation in extracellular fluid of rat striatum. Rats were anesthetized, and sodium salicylate in Ringer's solution (0.5 nmol/ l/min) was infused through a microdialysis probe to detect the generation of $\bullet OH$ as reflected by the non-enzymatic formation of 2,3-dihydroxybenzoic acid (DHBA) in the striatum. Induction of para-nonylphenol (10 μM) significantly enhanced MPP⁺-induced $\bullet OH$ generation. However, histidine (25 mM) decreased the para-nonylphenol-induced $\bullet OH$ formation. Although the level of MPP⁺-induced $\bullet OH$ formation trapped as DHBA after para-nonylphenol treatment increased, para-nonylphenol failed to increase either the level of dopamine (DA) and DHBA formation in the reserpinized animals. When iron (II) was administered to para-nonylphenol (10 μM)-pretreated rats, iron (II) clearly produced a dose-dependent increase in $\bullet OH$ formation, compared with MPP⁺-only treated animals, that showed a positive linear correlation between iron (II) and DHBA ($R^2=0.983$) in the dialysate. However, in the presence of histidine (25 mM), small increase in the level of DHBA products were observed. These results indicate that para-nonylphenol enhanced $\bullet OH$ generation on 1O_2 production, and histidine may have preventive effect on para-nonylphenol and MPP⁺-induced $\bullet OH$ generation in rat striatum.

Biography

Toshio Obata is currently working as a Professor in the Department of Nursing at Faculty of Health Sciences, Osaka Aoyama University, Japan. He has published several original research papers in the reputed journals and also participated into several scientific meetings.

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