Biol. Pharm. Bull., 23, 1536-1540, 2000.

Comparative Study of Superoxide Dismutase in Normal and Hereditary Cataract (UPL) Rats.

F. Komada (駒田富佐夫), Y. Saitoh (齋藤侑也), H. Kawabata (川端春乃), N. Ohsaka (大坂紀子), K. Okumura, M. Tomohiro, Y. Ito, M. Terao, and R. Hori

[1]Department of Drug Informatics, Faculty of Pharmaceutical Sciences, Josai University, Keyakidai, Sakado, Saitama 350-0295, Japan; [2]Department of Hospital Pharmacy, School of Medicine, Kobe University, Kusunoki-cho, Chuo-ku, Kobe 650-0017, Japan; [3]Research and Development, Research Department, Pharmacia & Upjohn, Shinjuku-ku, Tokyo 163-1448, Japan; [4]School of Pharmacy; and [5]Pharmaceutical Research and Technology Institute, Kinki University, Kowakae, Higashi-Osaka, Osaka 577-8502, Japan.

In the present study, the levels of SOD activity and Cu, Zn-SOD mRNA in the brain, kidney, liver and eye of normal and UPL rats, a new hereditary cataract model derived from Sprague-Dawley rats, were measured. Although the levels of SOD activity in the eye and brain of UPL rats were significantly decreased compared with those of normal rats 3 and 5 weeks after birth, the levels of SOD activities in the kidney and liver were the same in both groups. The levels of Cu, Zn-SOD mRNA in kidney and liver of UPL rats were the same as those of normal controls. The level of Cu, Zn-SOD mRNA in the brain of normal rats 5 weeks after birth was about twofold greater than that of UPL, and that in the eye of UPL rats 3 weeks after birth was significantly decreased compared with that of normal controls. The sequences of cDNA encoding Cu, Zn-SOD and the sequences of the

regulatory region of the Cu, Zn-SOD gene were confirmed to be the same in normal and UPL rats. These results indicated that the decreases in levels of SOD activity and Cu, Zn-SOD mRNA in the brain and eye of UPL rat were not due to mutation of the genomic Cu, Zn-SOD gene in UPL rats or differences in the sequence of the regulatory region of the Cu, Zn-SOD gene between normal and UPL rats.