PURIFICATION AND CHARACTERIZATION OF NEUROTOXIN PRODUCED BY *CLOSTRIDIUM BOTULINUM* TYPE D STRAIN SOUTH AFRICA

Hiromi SANTSUKA

Department of Biochemistry
Faculty of Veterinary Medicine
Hokkaido University, Sapporo 060, Japan

The toxin produced by *Clostridium botulinum* type D strain South Africa (D-SA) was purified 815-fold from the culture supernatant in an overall yield of 30%. The purified toxin had a specific toxicity of 1.63×10^7MLD/mg of protein and a molecular weight of 140,000 composed of a single polypeptide chain, in which two moles of disulfide linkage were contained.

The amino acid composition of D-SA toxin was most similar to that of C-6813 toxin (TERAJIMA et al., 1985), followed by D-1873 toxin (MURAYAMA et al., 1984) and C-ST toxin (SYUTO & KUBO, 1981), whereas the reactivity of four toxins to anti-D-SA toxin IgG was higest in D-SA toxin, followed by D-1873 and C-ST toxins and finally C-6813 toxin. The tryptic digest of D-SA toxin was composed of a heavy and a light chain with molecular weights of about 100,000 and 50,000, respectively, of which the specific toxicity was almost the same as that of the parent toxin.

These results indicate that D-SA toxin has common antigenic sites not only with D-1873 toxin (type D toxin) but also with C-ST and C-6813 toxins (type C_1 toxin), and that D-SA toxin is produced in a single polypeptide chain molecule having the same toxicity as that of di-chain structural toxins, D-1873 toxin (5.8×10^7MLD/mg protein), C-ST toxin (4.4×10^7MLD/mg protein) and C-6813 toxin (1.1×10^7MLD/mg protein), and the nicking of toxin by protease may not be correlate, directly to the activation of toxin.