Plasma endotoxin activity and trace elements kinetics in macropus giganteus infected-Lumpy Jaw Disease (LJD)

Karin Yokoe[1], Yukari Sotohira[1,2], Jun Noda[1], Kazuyuki Suzuki[1], Koichiro Sera[3] and Mitsuhiko Asakawa[1]

[1]School of Veterinary Medicine, Rakuno Gakuen University
582 Bunkyodai-Midorimachi, Ebetsu, Hokkaido 069-8501, Japan

[2]Itozu no mori Zoological Park
4-1-8 Kamiitozu, Kokurakita, Kitakyushu, Fukuoka 803-0845, Japan

[3]Cyclotron Research Center, Iwate Medical University
348-58 Tomegamori, Takizawa, Iwate 020-0603, Japan

Abstract

Lumpy Jaw Disease (LJD) is a progressive pyogranulomatous osteomyelitis involving mandibule or maxilla of captive macropods. LJD commences as periodontitis due to an oral mucosal invasion of *Fusobacterium necrophorum*, the infection spreads to adjacent bones and develops into osteomyelitis. LJD-infected kangaroo shows systemic inflammation due to endotoxin released from *F. Necrophorum*. It is known that the severity of this disease is related to the plasma endotoxin activity. It is known that systemic inflammation caused by endotoxin affects trace element dynamics in the blood. For example, serum Fe and Zn concentrations are low in cattle with coliform mastitis, and serum Cu concentrations increase in hamsters with acute inflammation. In this study, we investigated the relationship between LJD and trace element concentrations in plasma by Particle Induced X-ray Emission (PIXE) method, to understand trace element kinetics with elevated endotoxin level with a sign of the LJD.