

The Activity of Apo-transferrin on the Growth of *Staphylococcus intermedius* and *Staphylococcus schleiferi*

Youn-Ju Kim, A-Young Jeong, Tae-Ho Oh*

Department of Veterinary Medicine
Graduate school, Kyungpook National University
Daegu, Republic of Korea

Introduction: Apo-transferrin is an iron-binding protein which has been reported to have an antimicrobial effect and considered to be a major component of the host defense mechanism by limiting microbial access to iron. This study was performed to investigate whether human, bovine and canine apo-transferrin would have an inhibitory effect on growth of *S. intermedius* and *S. schleiferi* in vitro.

Materials and Methods: The activity of apo-transferrin was compared to those of other agents including human and bovine holo-transferrin, canine serum and 2,2-dipyridyl, an iron-chelating agent. Staphylococcal strains were grown at 32°C in 96-well culture plates using Muller Hinton broth containing human, canine or bovine apo-(or holo-)transferrin at concentrations ranging from 10.0 or 5.0 to 0.01 mg/ml. And the concentrations of canine serum were 19%, 38% and 96%. Optical densities(OD570 for *S.intermedius*, OD450 for *S.schleiferi*) of wells were measured.

Results: Canine serum had more effective than canine apo-transferrin on inhibition of bacterial growth at all concentrations. Iron-unsaturated transferrin of all species had valid inhibitory effect on growth of *S. intermedius* compared with iron-saturated transferrin. 2,2-dipyridyl, iron-chelating agent, certainly inhibited the growth of all strains at all concentrations tested after 12 hours of incubation. On the growth of *S. schleiferi*, there was no test material which showed inhibition except 2,2-dipyridyl.

Discussion: Therefore these suggest that apo-transferrin in serum may take a partial role of innate immunity against *S. intermedius* rather than holo-transferrin. And the activity of transferrin was of various extent depending upon species of transferrin or bacteria. Also these results indicate that iron deprivation is an important pathway of inhibiting bacterial growth.

* Corresponding author.
E-mail : thoh@knu.ac.kr