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Efficacy of intravenous administration of hyaluronic acid
for experimentally induced arthritis in horses

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Hyaluronic acid (HA) is a major component of synovial fluid which gives its characteristic high viscosity, and it is reported that intra-articular injection of HA is effective for arthritis in both humans and horses. However, it is not common in equine practice to treat arthritis through the intra-articular injection of HA because of some difficulties on restraint and aseptic manipulation. Recently, highly purified HA, which can be used intravenously, is available for the treatment of equine arthritis.

In this study, five horses were randomly assigned to HA group (n=3) and the control group (n=2). An experimentally-induced arthritis was made by the injection of chymopain (CP) into the carpal joint in all horses. After 3, 10 and 17 days of the CP injection, HA was given intravenously to the HA group. Comparisons between HA and the control groups over period of 59 days after CP injection showed that ;

(1) There were no significant changes on the hematological and serum biochemical analysis in both groups. (2) The HA group recovered from lameness in walking and trotting over an evaluation period of 59 days. One horse from the control group showed severe lameness until 10 days, but recovered the same as HA group. Another control horse did not improve at the end

of the study. (3) In the control group, one horse showed a remarkable increase in cell numbers and protein contents of synovial fluid and showed slow improvement as compared with other horses. (4) HA concentration in synovial fluid was significantly decreased and continued to decrease to a low level for two weeks after CP injection in all horses. In the HA group, synovial HA increased on day 24 in one horse and on day 38 in the other horse, and reached peak value on day 45. For the control group, slight improvement could only be seen on day 59. In the other horse, HA levels remained at low levels. (5) Keratan sulfate concentration in synovial fluids and serum was significantly increased only on day 3, then returned to normal levels in all horses. there were no significant differences between 2 groups.

The significant efficacy of HA injection was not found in this study, because HA was only injected 3 times, while too severe arthritis was experimentally induced. On the other hand, however, the results showed a tendency for early recovery from CP induced arthritis by the intravenous injection of HA in horse. The data suggests that intravenous administration of HA might have local anti-inflammatory effects and improves the HA concentration in synovial fluid.