HOKKAIDO UNIVERSITY

Title	Effects of a new cardiotonic agent, pimobendan on contractile responses in single muscle fibers of the frog
Author(s)	WAKISAKA, Chikako
Citation	Japanese Journal of Veterinary Research, 47(1-2), 70-70
Issue Date	1999-08-31
Doc URL	https://hdl.handle.net/2115/2751
Type	departmental bulletin paper
File Information	KJ00003408083.pdf

Hokkaido University Collection of Scholarly and Academic Papers : HUSCAP

anti-IL-1 β and anti-IL-1 α antibodies also suppressed the increase of serum IL-6 level. These results indicate that IL-1 in the brain mediates the signals of the IM stress and causes the increase in blood IL-6 levels.

Next, hepatic expression of IL-6 mRNA was determined during IM stress, since recent findings suggest the liver as one of the main organs for peripheral IL-6 production. IM stress enhanced the expression of IL-6 mRNA in the liver. However, icv administration of the IL-1 receptor antagonist did not affect the changes in the hepatic IL-6 mRNA expression by IM stress. These results suggest that the liver is a responsible for blood IL-6, but IL-6 production in this organ in not under the control of brain IL-1.

Conclusively, brain IL-1 is important in the control of peripheral IL-6 production induced by non-invasive stress, as well as inframatory stress.

Effects of a new cardiotonic agent, pimobendan on contractile responses in single muscle fibers of the frog

Chikako Wakisaka

Laboratory of Pharmacology.
Department of Biomedical Sciences,
School of Veterinary Medicine,
Hokkaido University, Sapporo 060–0818, Japan

1. The effects of a new cardiotonic agent, UD-CG 115 (pimobendan) on contractile activity were investigated in single twitch skeletal muscle fibers of the frog.
2. Pimobendan dose-dependently potentiated twitch responses to electrical stimuli (0.1 μM–100 μM) regardless of the presence or absence of Ca^{2+} without any effects on tetanic tension and electrical membrane properties. The half decay time of twitch responses was significantly prolonged by pimobendan.
3. Pimobendan caused further increase in twitch tension potentiated by caffeine (1 mM).
4. Adenine, an inhibitor of Ca^{2+} -induced Ca^{2+} release from the sarcoplasmic reticulum (SR), did not inhibit twitch responses potentiated by pimobendan, suggesting the lack of involvement of CICR.
5. Contractures induced by caffeine (2–3 mM) or KC1 (15–90 mM) were also potentiated by pimobendan. Concentration-response curves for caffeine or KC1 were shifted to the left by pimobendan.
6. Pimobendan increased Ca^{2+} (1 μM) -induced contraction in the skinned fibers.
7. 8-Bromo cyclic AMP slightly potentiated twitch responses, and further increase in twitch tension was observed with pomobendan in the presence of 8-bromo cyclic AMP. Pimobendan did not directly affect ATP-dependent Ca^{2+} uptake into fragment SR.
8. These results suggest that the positive inotropic effect of pimobendan is due to increase Ca^{2+} affinity to contractile apparatus in frog skeletal muscles.