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Insulinomimetic activity of zinc (II) complexes with halogenated picolinic acids

Shuhei Yamamoto[1)], Yutaka Yoshikawa[1)], Eriko Ueda[1)], Tetushi Yamashita[1)], Naemi Kajiwara[2)], Hiromu Sakurai[3)] and Yoshitane Kojima[1)]

1) Department of Chemistry, Graduate School of Science, Osaka City University
2) Graduate School of Life Science, Kobe Women's University
3) Department of Analytical and Bioinorganic Chemistry, Kyoto-Pharmaceutical University

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Abstract:
We prepared six new zinc(II) complexes of halogenated picolinic acids with a $Zn(N_2O_2)$ coordination mode and evaluated for their insulinomimetic activities by *in vitro* study. By introducing an electron withdrawing halogen groups into the picolinic acid, we prepared bis (4- or 6-chloro picolinato), bis(4-, 5- or 6-iodo picolinato), and bis(6-bromo picolinato)/zinc(II) complexes ($Zn(4cpa)_2$, $Zn(6cpa)_2$, $Zn(4ipa)_2$, $Zn(5ipa)_2$, $Zn(6ipa)_2$, and $Zn(6bpa)_2$, respectively). By *in vitro* evaluation of the inhibition of free fatty acid (FFA) release from isolated rat adipocytes in the presence of epinephrine, the insulinomimetic activities of $Zn(4cpa)_2$, $Zn(6cpa)_2$, $Zn(4ipa)_2$, $Zn(6ipa)_2$, and $Zn(6bpa)_2$ (IC_{50} = 0.64, 0.60, 0.77, 0.85, and 0.50 mM, respectvely) were found to be higher than that of bis (picolinato)/zinc(II) complex ($Zn(pic)_2$) (IC_{50} = 1.00 mM) in terms of IC_{50} value, the 50% inhibition concentrations for the FFA release from rat adipocytes.

Key words: diabetes, insulinomimetic activity, zinc(II) complex, picolinic acid derivatives

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