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Preparation of Conjugated Linoleic Acid Derivatives with Glucose

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Conjugated linoleic acid (CLA) is a lipophilic, providing a solubility problem for *in vitro* study of its properties and is present in the most food as triglyceride and/or phospholipid form (s) even a small quantity, resulting in difficulties for using the free CLA as food additives. To circumvent these problems, present study synthesized CLA derivative by chemical and thus biological activities and characteristics were examined. Glucose ester of CLA (CLA-Glc) was synthesized by chemical method of reacting CLA-Cl with 1,2-isopylidine- glucopyranose and then hydrolysis, yielding more than 60% CLA-Glc. CLA-Glc was purified by silica gel column chromatography and TLC, followed by identified by IR, ^{1}H-NMR, ^{13}C-NMR, and GC. Antimutagenic activity of CLA-Glc against IQ, MeIQ, and AFB_1 was a quite dependent on the mutagens used. The activity of CLA was quite strong for all the mutagens, however, CLA-Glc showed slight lower activity than CLA. CLA was the most active anticarcinogenic for mouse ascites cancer induced by S-180 cells, but CLA-Glc was also active with a leaser extent than CLA. For the mouse forestomach neoplasia, CLA-Glc was similarly effect to CLA. Mouse liver microsome treated with CLA-Glc was resistant to oxidation induced by NADPH/Fe^{++} or Asc/Fe^{++}, but not CuOOH or ABIN. Mouse body weight reduction was overcame by CLA-Glc as compared to CLA. These results suggest that CLA-Glc exhibited the enhanced preventive cancer activity and was prepared to enhance water solubility of CLA in foods.