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**STRUCTURE, SYNTHESIS, AND BIOLOGICAL FUNCTION OF NATURAL PRODUCTS IN DEER ANTLER AND THEIR DERIVATIVES**

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Studies on natural products are of great interest, due to the limits in development of synthesized medicine and its side effects. Deer antler is the most popular cure-all type drug among Asian folk medicines. In this study, we newly isolated the biologically active components from chloroform extract and 70% ethanol extract of deer antler, and analyzed their structures. First, the structure of monoacetyldiglyceride in deer antler was identified. To investigate the structure-activity relationship of monoacetyldiglycerides, we synthesized diverse substituted glycerides from glycerol, and confirmed their structures by spectroscopic methods. Among seven structurally-interesting compounds tested in this study, compound 1,2,3,5, and 6 showed activity toward  $[Ca^{2+}]_i$  increase in fura-2 loaded rat pancreatic acinar cells. Second, 70% ethanol extract of deer antler stimulated insulin release from rat pancreatic islets. We found the most effective fraction was CN-Es-8 in 70% ethanol extract, and it increased intracellular  $Ca^{2+}$  concentration in pancreatic  $\beta$ -cell.