Development of probe molecules by means of an efficient synthesis on catechin derivetives

Yasuo HIROOKA

Department of Synthetic Medicinal and Organic Chemistry, Graduate School of Pharmaceutical Sciences

(−)-Epigallalocatechin gallate (EGCG) (**1**), which is a major constituent of green tea extract, has received special attention for its antitumoral, antiviral and other important bioactivities. These interesting bioactivity and structure led us to perform efficient synthesis of EGCG and utilize its derivatives that would be useful for the structure-activity relationship study. During the course of our synthetic investigation of **1**, we found the synthetic derivative **2** possessed more potent inhibitory activity of influenza virus infection than **1**. Inspired this finding, we have launched an investigation into the synthesis of EGCG probe precursor **3** (6-aminopentyl-5,7-dideoxy EGCG : APDOEGCG) which contained a reactive amine group. Treatment of **4** and AD-mixβ afforded desired diol and regioselective incorporation of gallate unit gave monoester **5**. After the oxidation of secondary alcohol by AZADO, reductive cyclization was carried out using Et_3SiH. In this conditions, stabilized intermediate **7** was generated and stereoselective hydration afforded 2,3-*cis* dihydrobenzopyrane **8** predominantly. After the deprotection of whole protecting groups, we accomplished the stereoselective synthesis of optically active **3**. Now, we are investigating the utility of **3** as various probe molecules.