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Identification of aldose reductase inhibitory compounds from *Zea mays* L. by LC-ESI-MS

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Identification of aldose reductase inhibitory compounds from *Zea mays* L. by LC-ESI-MS: As part of our ongoing search of natural sources for therapeutic and preventive agents for diabetic complications, the aldose reductase inhibitory effect of purple corn (*Zea mays* L.) was investigated. In an attempt to identify bioactive components, seven polyphenols and five anthocyanins were identified by LC-ESI-MS and isolated by column chromatography, including protocatechuic acid (154 *m/z*), vanillic acid (168 *m/z*), 2,4,6-trihydroxy benzoic acid (170 *m/z*), p-hydroxycinnamic acid (164 *m/z*), ferulic acid (194 *m/z*), hirsutrin (464 *m/z*), 3'-methoxyhirsutrin (478 *m/z*), cyanidin-3-glucoside (449/287 *m/z*), pelargonidin-3-glucoside (433/271 *m/z*), peonidin-3-glucoside (463/301 *m/z*), cyanidin-3-(6"-malonyl-glucoside) (535/449/287 *m/z*), and peonidin-3-(6"-malonyl-glucoside) (549/301 *m/z*). These compounds were investigated via inhibitory assays of rat lens aldose reductase, kinetic study of recombinant human aldose reductase, and galactitol accumulation in rat lenses and erythrocyte. Among them, *Zea mays* L. derived anthocyanins hirsutrin showed most potent inhibitory effect of rat lens aldose reductase with IC50 values of 4.78 μM. In the kinetic analyses using Lineweaver-Burk plot of 1/velocity and 1/concentration of substrate, hirsutrin showed non-competitive inhibition against recombinant human aldose reductase. Furthermore, it inhibited galactitol formation in a rat lens incubated with a high concentration of galactose. Thus, hirsutrin could be offered as a leading compound for further study as a new natural products drug for diabetic complications.

Biography

Soon Sung Lim, PhD holder started his graduate studies at The Korea University and Seoul University. He published his first paper in 1996 on the synthesis of a thermodynamic compound as a pigment. He received his PhD in 2000 for the development of the natural products and synthetic compounds for the treatment of diabetes or its complications and began his independent academic career at the Hallym University in 2003. His research interests involve natural products (particularly the isolation and target selection from mixture), the chemistry of fortified food materials and mass spectrometry.

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