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Lipidomic approach to study metabolic changes in oral administration of rosuvastatin in both healthy human and hypercholesterolemic patients

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Rosuvastatin is 3-hydroxy-3-methylglutaryl coenzyme A reductase inhibitors which reduces cholesterol level in plasma and affects global lipid metabolism. Therefore overall change of lipid profile can be closely related to the drug's effects or adverse effect. In this study, metabolic change of lipid after rosuvastatin treatment was investigated by a simple and rapid lipid profiling method using UPLC-QTOF-MS.

Rosuvastatin was orally treated (3-8 weeks) to both healthy adults (n=32) and hypercholesterolemic patients (n=20), and blood samples were collected in time schedule. Plasma lipids were extracted by a simple liquid-liquid extraction (LLE) with chloroform/methanol (1:2, v/v). The extracts were analyzed in full scan mode by UPLC-QTOF-MS using electrospray ionization (ESI) both positive and negative mode.

In the results of lipid profiling, the level of lysophosphatidylcholines (LysoPCs) and fatty acids (FAs) increased in patient group, but they did not show any significant change in healthy groups. The level of several phosphatidylcholines (PCs) such as PC (32:0), PC (34:1), PC (34:2) and PC (36:2) decreased and PC (38:4) increased after rosuvastatin treatment, and those phenomenon were identical in both of healthy and patient groups. However, the level of PC (32:1) and PC (38:6) decreased and PC (36:4) increased in patient group, which were opposite in healthy group. These results implied that the membrane fluidity was influenced by cholesterol-lowering effect of rosuvastatin following increase of phospholipase A2 activity which is related to phosphatidylcholine degradation.

Biography

Jong Min Choi has been studying her Ph.D. course at EwhaWomans University. She is also working as a research assistant at Korea Institute of Science and Technology since 2011. The main topics of her research are pharmacokinetics, metabolomics and lipidomics.

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