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Relative physiological activity of chlorogenic acid and 3,5-dicaffeyolquinic acid on problems caused by high-fat diets

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This study was performed to confirm the influence of chlorogenic acid (CGA) and 3,5-dicaffeyolquinic acid (3,5-diCQA) intake on disorders caused by high-fat diets. They have been shown to improve impaired glucose tolerance and inhibit weight gain caused by high fat diet although CGA and 3,5-diCQA differ in their activity. In biopsy, it is confirmed that CGA inhibits visceral fat and liver fat accumulation and 3,5-diCQA also inhibited visceral fat accumulation, but a 3,5-diCQA increased liver fat accumulation. Both CGA and 3,5-diCQA inhibit accumulation of visceral fat by stimulating AMPK phosphorylation in epididymal white adipose tissue. CGA also increased AMPK phosphorylation in the liver tissue, but 3,5-diCQA reduced AMPK phosphorylation. This result in liver tissue is presumed to be related to Akt phosphorylation. AKT phosphorylation was significantly increased in liver of the 3,5-diCQA group. Increased AKT phosphorylation improved glucose tolerance, but it inhibited AMPK phosphorylation and thereby increase fat accumulation in liver. In addition, as a result of confirming the degree of liver damage, the liver fat accumulation induces oxidative stress, but 3,5-diCQA reduced oxidative damage through its antioxidant activity. To sum up, a CGA is effective in improving the problems caused by high-fat diets while maintaining balance. A 3,5-diCQA also has shown a positive effect on problems caused by high-fat diets, but it increased liver fat accumulation and thereby cause negative consequences.

Biography

Jin Yong Kang is pursuing his PhD from Gyeongsang National University in Republic of Korea. He is mainly studying on functional foods. He has published two papers in SCI(E) journals and participated as a co-author in more than five papers.

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