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Potential Lipase Inhibitors from *Trigonella foenum-graecum* Seeds

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Obesity has become a worldwide health problem. There are anti-obesity drugs currently available, in which lipase has been targeted to inhibit the enzymatic breakdown of dietary fat and eventually to reduce fat absorption. However, gastrointestinal side effects caused by these drugs may limit their use. Therefore, natural lipase inhibitors from plants and their constituents to for use as anti-obesity agents will have demand. Here we report the isolation of lipase inhibitors from *Trigonella foenum-graecum* L seeds.

Crude methanol extract of *T. foenum-graecum* seeds was chromatographed over silica gel using a solvent gradient of n-hexane-EtOAc-MeOH, resulting in five fractions (A'_1 to A'_5) with A'_3 and A'_4 fractions showing highest lipase inhibition activity (43.01 and 45.09%). Combined fractions A'_3 and A'_4 was subjected to chromatography over silica gel using a gradient of solvents CH_2Cl_2-MeOH, reversed phase column chromatography (60% H_2O:MeOH - 100% MeOH) and high performance liquid chromatography (UV 254 nm; 70% H_2O:MeOH) to yield compounds **A**, **B** & **C**. **A** was identified as a rotamer mixture of vicenin-1 (6-C-xylosyl-8-C-glucosyl apeginin), **B** as isoschaftoside (apigenin 6-C-α-L-arabinopyranosyl-8-C-β-D-glucopyranoside) and **C** as schaftoside (apigenin 6-C-β-L-glucopyranosyl-8-C-α-D-arabinopyranoside) from NMR and MS spectral data. Vicenin 1 (IC_{50}- 207.4 μg/ml) was a much potent lipase inhibitor than isoschaftoside (IC_{50}- 331.0 μg/ml) with schaftoside was having the highest potency (IC_{50} -130 □g/ml).

This is the first report of isolation of lipase inhibitors from *T. foenum-graecum* seeds and of vicenin 1 being a lipase inhibitor. The lipase inhibitors should be studied in *in vivo* models to confirm their status as anti-obesity agents.