

POSTER PRESENTATION

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Effect of nano-encapsulated (-) epigallocatechin gallate on triglyceride accumulation in 3T3-L1 adipocytes

Priyanka Bapat*, Shu Wang

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Background

Obesity is considered the major risk factor for type 2 diabetes mellitus (T2DM), cardio-vascular diseases like hypertension and atherosclerosis [1]. Catechins are the major source of flavonols and they are comprised of various types of catechins such as epigallo catechin 3 gallate (EGCG), epigallocatechin (EGC), epicatechin gallate (ECG) [2]. Numbers of *in vivo* studies have reported weight loss after drinking green tea for several months. To support these *in vivo* findings, many *in vitro* studies demonstrated effect of pure EGCG which is an important biologically active green tea catechin in reducing triglyceride accumulation in adipocytes [3]. However, these anti-adipogenic properties of EGCG are greatly dependent on bio-availability which is very low in animals as well as in humans. One study showed that, peak plasma concentrations in humans were 1.3 μM for EGCG after a single dose of 1.5 mmol through oral administration [4]. Nano-encapsulated EGCG (Nano-EGCG) may help to increase bioavailability and to exert maximum anti-adipogenic effects.

Materials and methods

We synthesized Nano-EGCG using sonication method. Pure EGCG (95%) was bought from SIGMA Company. Nano-EGCG was dissolved in phosphate buffered saline (1XPBS) and was stored at 4 degree Celsius. 3T3-L1 Pre-adipocytes were obtained from ATCC. Cells were cultured using a standard protocol. Post-confluence cells were differentiated using a standard chemical cocktail mixture. Further cells were maintained in maturation medium and treated with native EGCG and Nano-EGCG at 10 μM for

48 hours. Cellular triglyceride levels were measured using an enzymatic method.

Results

Nano-EGCG significantly ($p < 0.05$) reduced triglyceride accumulation in mature adipocytes as compared to 1X PBS, native EGCG and its void counterpart. EGCG didn't significantly reduce the cellular triglyceride accumulation as compared to 1XPBS.

Conclusion

Data suggests that 10 μM of Nano-EGCG significantly reduced triglyceride accumulation as compared to 1X PBS, void counterpart and native EGCG.

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Nutrition, Hospitality & Retailing Department, Texas Tech University, Lubbock, Texas, 79409, USA