

### Platycodi Radix Beverage Improves Postprandial Lipemic Response Associated With Plasma Bacteria-Derived Extracellular Vesicles in Healthy Adults With an Oral Fat Load

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**Objectives:** This study aimed to examine the responsiveness of postprandial triglyceride-rich lipoprotein (TRL) metabolism to *Platycodi radix* beverage (PR) is associated with the alterations in plasma bacteria-derived extracellular vesicles (EVs) composition.

**Methods:** Ninety-six healthy and normolipidemic adults were randomly divided into two groups and consumed PR or placebo for 8 weeks. An oral fat tolerance test was performed before and after the 8-week intervention to assess the postprandial lipid response. Plasma TG, chylomicron TG (CM-TG), and lipoprotein lipase (LPL) mass levels were measured at fasting, 3, and 6 hours during the oral fat tolerance test and summarized by computing the area under the curve (AUC). EVs isolated from fasting plasma samples were identified using 16S rRNA sequencing. A linear mixed-effect model was used to analyze the difference between the two groups. TLR clearance responder to PR consumption was defined by QUALitative INteraction Trees (QUINT).

Lasso regularized generalized linear model (GLM) was used to find genera associated with the responsiveness.

**Results:** PR consumption for 8 weeks noticeably decreased AUC (0–3h) values for TG and CM-TG compared to the placebo group. Responders for TRL clearance were defined as subjects having higher LPL mass (150.6 ng/mL) and dietary fat intake (38.5 g/day) at baseline. Responders showed remarkable reductions in AUC (0–6h) values for TG and CM-TG in the PR group compared to the placebo group. Furthermore, GLM analysis demonstrated that the responsiveness of postprandial TRL clearance was accurately predicted by the model consisting of changes in the relative abundance of 16 genera, suggesting the close association between them.

**Conclusions:** These findings suggest that PR consumption modulates postprandial TRL clearance by altering plasma EV composition in normolipidemic adults with habitually higher fat intake over 38.5 g/day.

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