Equol producing status affects exercise training-induced improvement in arterial compliance in postmenopausal women

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Background
- Central arterial compliance decreases drastically after menopause.
- Regular intake of soy isoflavone and aerobic exercise increase arterial compliance.
- Equol is a metabolite of isoflavone daidzein by gut microbiome.

Objective
To determine whether the equol-producing status affects aerobic exercise-induced improvement in carotid arterial compliance.

Design
- Forty-three postmenopausal women were assigned to two intervention groups: (1) exercise and isoflavone (Ex + Iso, n = 27) or (2) isoflavone interventions (Iso; n = 16).
- Participants in the Ex + Iso intervention group completed an 8-week aerobic exercise training, and all participants were administered oral isoflavone supplements during the interventions.
- Equol-producing status (equol producers or non-producers) was determined from urine equol concentrations after a soy challenge.

Main findings
- In the Ex + Iso intervention group, carotid arterial compliance increased in the equol producers (0.084 ± 0.030 → 0.117 ± 0.035 mm²/mmHg) but not in the non-producers (0.089 ± 0.028 → 0.097 ± 0.026 mm²/mmHg) after the intervention (interaction effect; p < 0.05).
- The magnitude of increases in carotid arterial compliance was significantly greater in the equol producers than in the non-equol producers (p < 0.05).
- In the isoflavone intervention group, there were no changes in any parameters after the intervention irrespective of the equol status.

Take-home message
- Results suggest that equol-producing status is obligatory to aerobic exercise training-induced improvements in central arterial compliance in postmenopausal women.