Equol Status and Relevance to Women’s Health and Menopause

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Equol

- Equol exists in S- and R- isomers.
- Equol is the naturally occurring form produced in the body.
- Equol is considered to be the isomer that is believed to have benefits.

Introduction

- Equol is a metabolite of daidzein, a soy isoflavone. It is a non-steroidal estrogen and major intestinal derived bacterial metabolite of daidzein one of the principal isoflavones found in soybeans and most soy foods.
- Natural S-equol has been developed as a nutraceutical ingredient via a patented process using soy germ fermented with Lactococcus garvieae.
- S-equol has been shown to have affinity for the ER receptor-β. It is thought to potentially be a selective estrogen receptor modulator (SERM) and may be beneficial for prevention or treatment of estrogen dependent conditions such as menopause.
- Natural S-equol has been studied for its benefits included improvement in menopause, anxiety, depression, fatigue and vigor scores.

Results

- The objectives of the study was to evaluate the effects of oral S-equol supplement on menopausal symptoms in a single-center, 12 week, double blind, randomized, placebo controlled trial in Japanese perimenopausal and post-menopausal women.

Methods and Materials

- Participants: 134 Japanese women (aged 40-59 yr) randomly assigned to one of the two treatment or placebo groups
  - EQ 10 mg (n=44): 10 mg of S-equol per day
  - EQ 30 mg (n=44): 30 mg of S-equol per day
  - Placebo (n=46)

Abstract

This human intervention study is designed to examine the potential health benefits of naturally occurring equol in menopausal women. In a single-center, 12 week, double blind, randomized, placebo controlled trial in Japanese perimenopausal and postmenopausal women, the effects of oral S-equol supplement on menopausal symptoms in a single-center, 12 week, double blind, randomized, placebo controlled trial in Japanese perimenopausal and postmenopausal women.

S-equol group took one EQ stick each day before breakfast. The EQ group took three EQ sticks each day. One EQ stick was taken before the breakfast, lunch and dinner meal.

Table 1. Menopausal scores, POMS scores, and hormones at baseline and after 12 weeks of equol supplementation in perimenopausal and postmenopausal women.

<table>
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<tr>
<th>Group</th>
<th>Menopausal Scores</th>
<th>POMS Scores</th>
<th>Hormones</th>
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<td>Placebo</td>
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Somatic Score

- 16% of the 553 subjects tested, 185 were equol producers and their serum uric acid was 3.5 mg/dL vs. 4.2 mg/dL for the non-producers (P=0.019). Within the pre-menopausal group 52 (28%) were equol producers and their serum uric acid was 3.5 mg/dL vs. 4.2 mg/dL for the non-producers (P=0.019). Within the post-menopausal group 11 (13%) were equol producers and their serum uric acid was 4.0 mg/dL compared to 4.9 mg/dL for non-producers (P=0.017).

Table 2. Menopausal scores, POMS scores, and hormones at baseline and after 12 weeks of equol supplementation in perimenopausal and postmenopausal women.

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Bolstered by a recent study in China about 23% were equol producers. After a 3-day challenge with soy isoflavones added to the diet, 55% were equol producers.

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Equol vs. Non-Equol Producers

- Approximately 50% of Japanese are equol producers while in the U.S. and Europe only 30% can produce equol in response to a soy challenge test.
- Japanese women ages 40-65 yrs were tested for equol production. There were 145 equol producers and 166 non-producers. Serum uric acid concentrations were 4.4 and 4.6 mg/dL, respectively (P=0.02).

Serum triglycerides were 87 and 107 mg/dL, respectively (P=0.003).

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Table 3. Design of Intervention Trial

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<th>Outcome</th>
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Figure 1. Design Intervention Equal

Figure 2. Effects of Natural S-Equol in Japanese Menopausal Symptom Score

Menopausal Symptom Score was self-reported in the questionnaire and physical examination, blood and 24hr urine collection were done for biochemical analysis at baseline and at the end of treatment in the study.

Implications for Nurse Practitioners

- Equol supplementation improved mood-related symptoms in both perimenopausal and postmenopausal Japanese women and nonproduced.
- Benefits include improvement in menopause, anxiety, depression, fatigue and vigor scores.
- The population and intervention results suggest that the data demonstrates equol may have health benefits for menopausal symptoms.
- Evaluation in the U.S. population is underway.