Soy (Glycine max)

| Practice points |
Soy and its derivatives may be beneficial for peri- and post-menopausal women in reducing hot flushes and providing benefits for bone density and cardiovascular risk.

Results from clinical trials are more convincing in women in the early stages of natural menopause with only mild to moderate symptoms.

| Key indications |
Menopause: According to meta-analyses of randomised controlled trials (RCTs), soy phytoestrogens/isoflavones reduce the frequency of hot flushes in menopausal women,1 improve cognitive function and visual memory in postmenopausal women,2 and may also have positive effects on blood pressure.3 Clinical trial results can however be inconsistent due to differences in methodology and the soy interventions (e.g. isolated genistein, soy extract, soy protein powder) and the dosage regimes used.

Bone density: Soy isoflavones may increase bone mineral density, inhibit bone resorption, stimulate bone formation and reduce bone loss in the spine of menopausal women.4 6

Cardiovascular Disease: Consumption of soy protein may improve blood lipids (LDL, triglycerides and HDL) and blood pressure.2,7 However, a 2016 systematic review and meta-analysis found inconclusive evidence that soy consumption reduces the risk of coronary heart disease and stroke. While case-control studies showed positive associations, cohort studies did not.8

| Key actions |
Hormone modulation
Cardiovascular effects
Anticancer

| Recommended Doses |
Soy is one of the best sources of phytoestrogenic compounds known as isoflavones or isoflavonoids. These include daidzein and genistein. Equol is produced variably by intestinal bacteria from daidzein and studies tend to report more favourable effects in equol producers compared to non-producers. Soy foods contain variable amounts of isoflavones (e.g. soy flour 1.3 mg/g isoflavones, soy milk 0.25 mg/g) and the use of different soy interventions in clinical trials makes it difficult to ascertain optimal doses. Positive results have been observed with the following doses:

Menopause: 20 g soy protein (equivalent to 160 mg isoflavones/day) for at least 12 weeks.10

Bone density: 90 mg/day of isoflavones for at least 6 months.5

High blood pressure: Soy protein 33 g/day (equivalent to ~54 mg isoflavones)3

High Cholesterol: Soy protein 30 g/day7

| Adverse Effects |
May cause gastrointestinal discomfort or menstrual irregularities in some people.

Soy may act as a goitrogen affecting thyroid function, especially in those with iodine insufficiency.
Generally considered safe, especially as a food, however some people are allergic to soy foods or do not digest soy effectively.

Allergic cross-reactivity is possible for people allergic to birch pollens.

A case report exists of gynecomastia in an elderly man consuming high amounts of soy.

| Cautions/ Contraindications |

Safety remains unclear in people with breast or prostate cancer. Soy food intake appears to be safe and potentially beneficial for women with breast cancer but these results cannot necessarily be extrapolated to soy supplements. Likely to be safe in pregnancy/lactation at usual dietary intake but safety has not been confirmed for high dose isoflavone supplements.

People at risk of thyroid disease should be monitored when taking high dose soy products due to possible effects on thyroid hormones.

| Possible Interactions |

Warfarin: soy may decrease anticoagulant effect although data are conflicting

Thyroxine: soy may decrease absorption and blood levels although data are conflicting

Tamoxifen: soy may reduce drug effect although data are conflicting

REFERENCES