

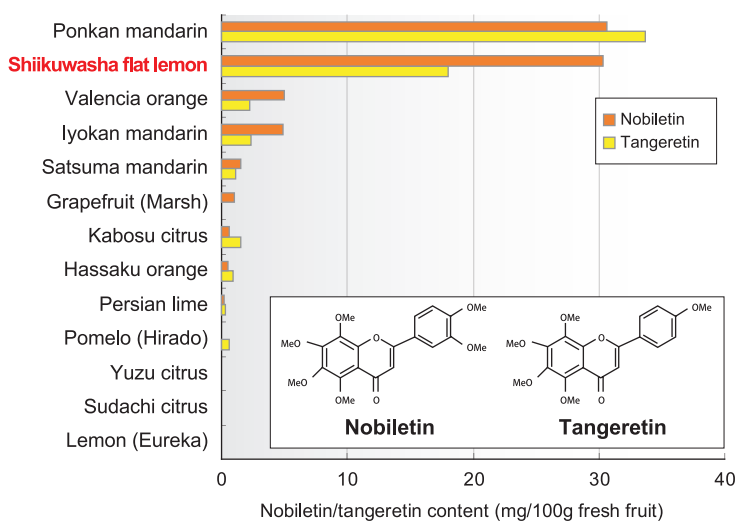
Shiikuwasha Extract

Biletin

High concentration nobiletin ingredient



PMF amount found in citrus fruits



(Nogata Y. et al. Flavonoid composition of fruit tissues of citrus species. Biosci. Biotechnol. Biochem. 2006, 70(1), 178-92)

Product specifications

Product standards

Properties: Powder, light yellow to brown in color, with a characteristic smell

Loss on drying: 8.0% or less

PMF (polymethoxy flavonoid): 10% or over (PMF= total of nobiletin and tangeretin)

Arsenic: 2ppm or less

Heavy metals: 20ppm or less

Total viable count: 1,000/g or less

Fungi count: 300/g or less

Coliform bacteria: Negative

Storage method

At room temperature in a sealed state

Packaging

100 g, 1 kg (GL film bag)

Ingredients

Shiikuwasha (*Citrus depressa* Hayata) fruit extract (using hydrous ethanol). (This product contains cyclic oligosaccharides).

Use for

Preventing metabolic syndrome
Improving lipid metabolism
Treating inflammation

Examples of application

Supplements, beverages, etc.

Recommended daily intake

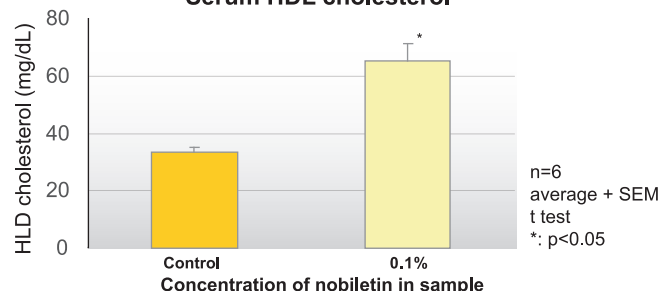
10 to 45 mg/day (1.0 to 4.5 mg/day of PMF)



Product appearance

Efficacy test (rat)

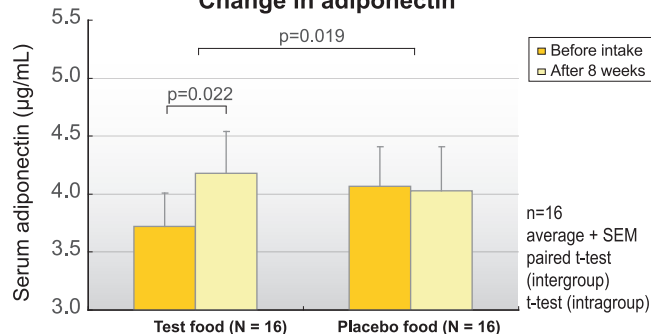
Serum HDL cholesterol



Animal: SD rats
Group: Control group, 0.1% nobiletin intake group
Method: The 2 groups were given unlimited access to the food for 4 weeks.
(Nagata E. et al. Effect of Nobiletin on Lipid Metabolism in Rats. JOURNAL OF HEALTH SCIENCE. 2010, 56(6),705-711)

Efficacy test (human)

Change in adiponectin



Subject: Adult males and females who have a visceral fat area of 100 cm² or more, measured with CT
Groups: One group taking hard capsules containing Shiikuwasha extract (100 mg/day of polymethoxy flavonoid), one group taking placebo capsules
Method: Double-blind Parallel group test (8 weeks of intake)
Kawai H. et al. Effects of shiikuwasha (*Citrus depressa* Hayata) extract in humans with abdominal obesity. Presented at the 39th Annual Scientific Meeting of the Japan Atherosclerosis Society (2007)

Safety tests

Genotoxicity test

Bacterial reverse mutation test (Ames test)

Acute toxicity test (single dose toxicity test)

2,000 mg/kg of Biletin on 5 male and 5 female rats, single dose.

Subacute toxicity test (repeated dose toxicity test)

250 to 1,000 mg/kg/day of Biletin (25 - 100 mg/kg/day of PMF) on 6 male and 6 female rats, repeated for 28 days.

Overdose test on humans

Test food containing 650 mg/day of Biletin(65 mg/day of PMF) on 6 adult males, taken for 4 weeks.

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