

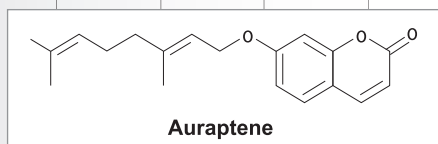
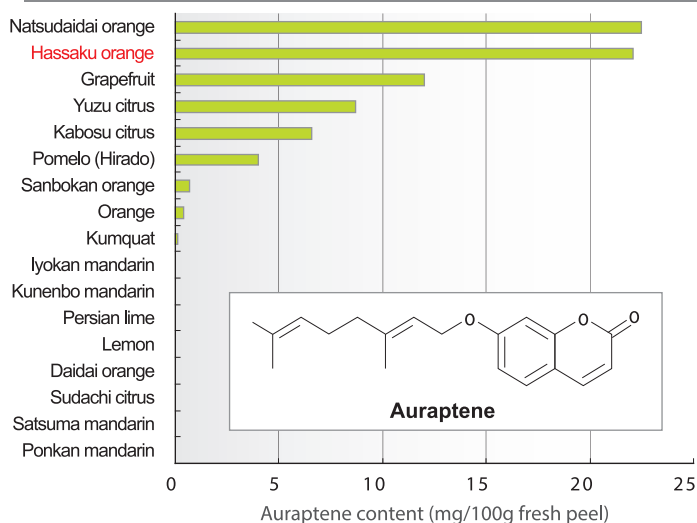
Hassaku oil extract

Rapten

High concentration auraptene food material



Auraptene amount found in the peels of citrus fruits



(Takahashi, Yasuo *et al.* Rapid and convenient method for preparing auraptene-enriched product from hassaku peel oil: implications for cancer-preventive food additives. *J. Agric. Food Chem.* 2002, 50, 3193-3196.)

Product specifications

◇ Product standards

Properties: Fat soluble powder, milky white to yellow in color, with a characteristic smell

Loss on drying: 1.0% or less

Auraptene: 80% or over

Arsenic: 2 ppm or less

Heavy metals: 20 ppm 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

50 g (GL film bag)

◇ Composition

Purified oil derived from hassaku (*Citrus hassaku*) juice

◇ Use for

Preventing metabolic syndrome

Improving lipid metabolism

Treating inflammation

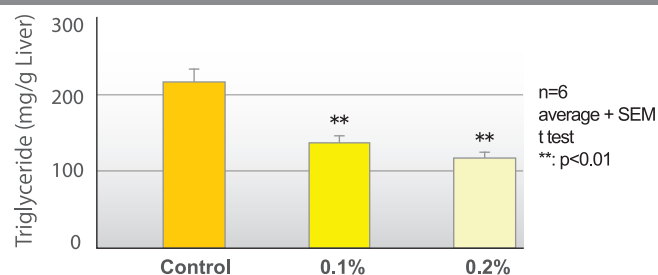
◇ Examples of application

Supplements, health foods etc.

◇ Recommended daily intake

6 to 12 mg/day (5 to 10 mg/day of auraptene)

Efficacy test (mice)



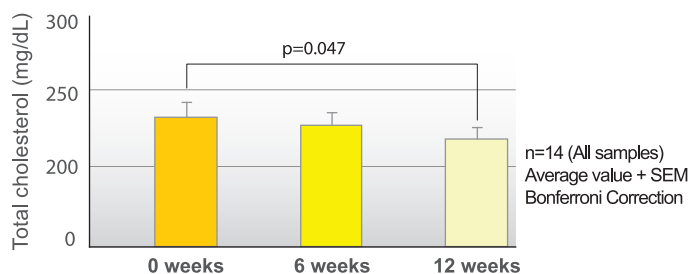
The concentration of auraptene in the test food.

Animals: KK-Ay mice

Groups: a control group and two groups taking test food containing 0.1% or 0.2% of auraptene

Method: the 3 groups were kept under pair-feeding for 4 weeks (Takahashi, Nobuyuki *et al.* Auraptene regulates gene expression involved in lipid metabolism through PPAR α activation in diabetic obese mice. *Mol. Nutr. Food Res.* 2011, 55, 12, 1791-1797.)

Efficacy test (human)



Subjects: men aged between 40 and 64 whose LDL cholesterol are ≥ 140 mg/dL

Groups: two groups taking 10 mg or 20 mg/day of auraptene

Method: the two groups took their test food for 12 consecutive weeks.

(Kawai, Hiroshige *et al.* Effects of auraptene from *Citrus hassaku* fruit in individuals with premetabolic syndrome. The 66th Annual Meeting of Japan Society of Nutrition and Food Science. 2012.)

Safety tests

◇ Genotoxicity test

Bacterial reverse mutation test (Ames test)

◇ Acute toxicity test (single dose toxicity test)

2,000 mg/kg of test food oil (200 mg/kg of auraptene) on 5 male and 5 female rats, single dose.

◇ Subacute toxicity test (repeated dose toxicity test)

500 to 2,000 mg/kg/day of test food oil (50 - 200 mg/kg/day of auraptene) on 6 male and 6 female rats, repeated for 28 days.

◇ Overdose test on humans

1,000 mg/day of test food oil (100 mg/day of auraptene) on 6 adult males, taken for 4 weeks.

ARKRAY Group Karada Lab, Inc.

Yousuien-nai, 59 Gansuin-cho, Kamigyō-ku
Kyoto 602-0008, JAPAN

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