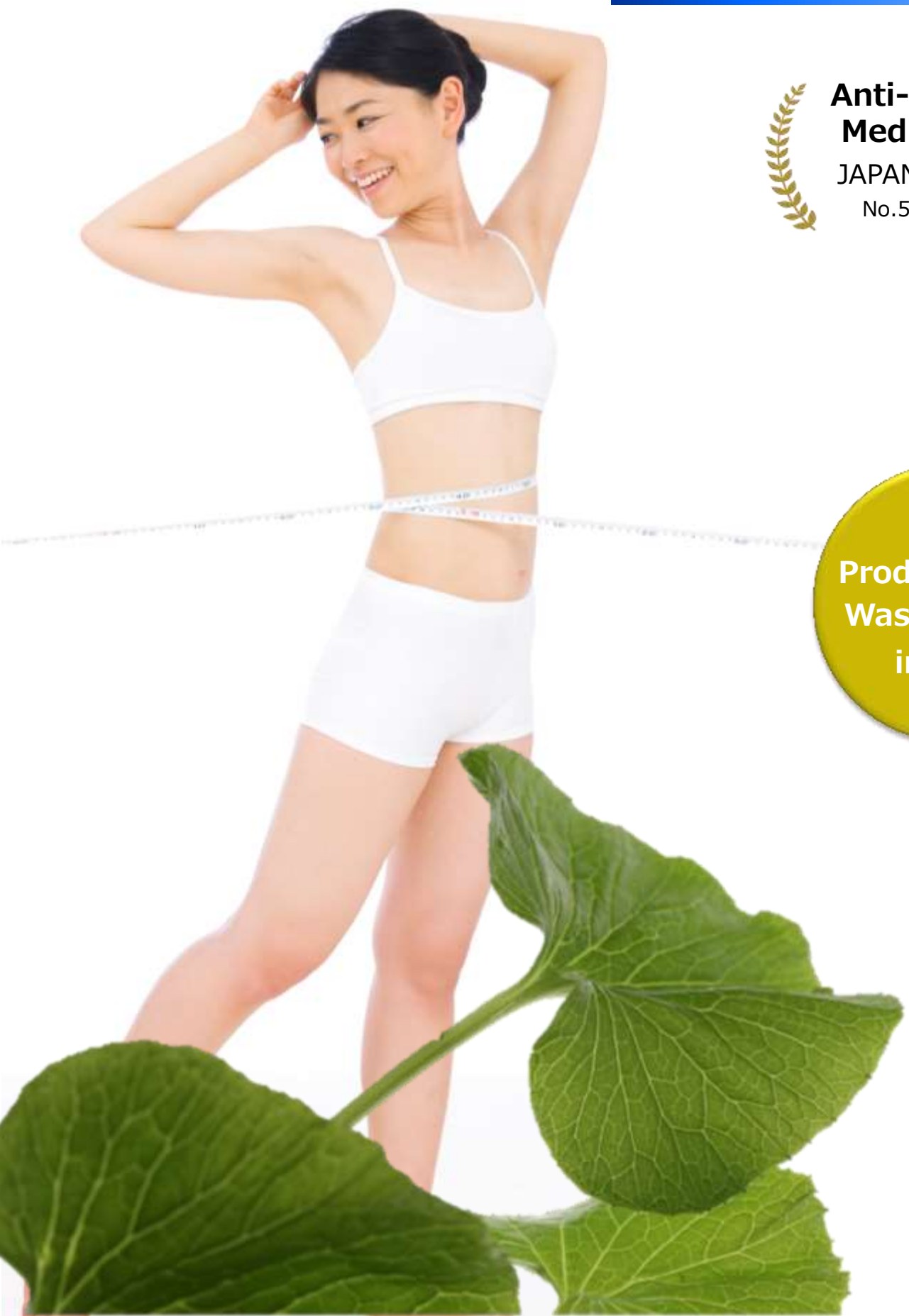
# 金印ワサスリム®

# Wasaslim™

**Ingredients for healthy food**

**For Diet Supplements**



**Anti-obesity Medication**

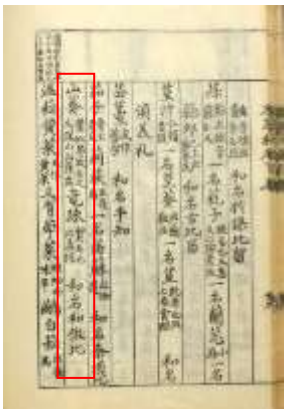
JAPAN Patent

No.5758561

**Produced from Wasabi leaves in Japan**

# Historical Medical benefits of wasabi

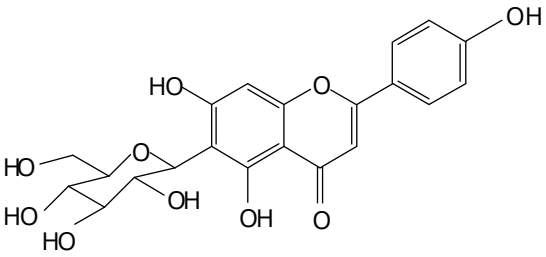
"Wasabi" is a traditional ingredient essential to Japanese cuisine.
Once upon a time, about 13 centuries ago.
The word of "wasabi" can find among strip of wood which discovered at the Asuka capital enchi site, upon which the names of medicinal herbs and prescriptions are thought to be recorded.
Later on, the word of "wasabi" was recorded in manuals on medicinal herbs, including "Honzo Wamyo" from the Heian period, "Honcho Shokkan" and "Yamato Honzo" from the Edo period. So it is believed that wasabi was used as a medicinal herb in ancient times.
And the other hand, Ieyasu TOKUGAWA as the first Edo shogun, who is well-known for his longevity, eated wasabi habitually. He is also known for ruling it as contraband not to be spread to other regions.

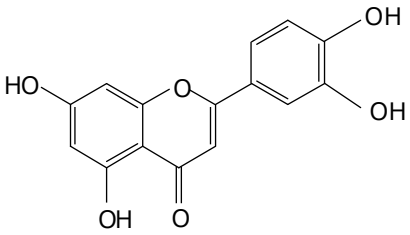
# About Wasaslim™

Wasaslim ™ is perfect raw material for health food including extracted from wasabi leaves and contains flavonoids such as "Isovitexin" and "Luteolin" as an active ingredient.

※ The Pungent flavor has been removed the original manufacturing method of the Kinjirushi.




**Isovitexin**




**Luteolin**

# Safety test

The products safety were confirmed by following tests.

- Mutagenicity test
- Toxicity test
  by single Oral administration
- Toxicity test
  by 28 days repeated Oral administration

# Product standard

| | |
|---|---|
| Product | Wasaslim™ KPD-1 |
| Recommended amount of mixture | 200 mg per day |
| Form | Light to medium brown powder |
| Storage method/Expiration date | Store in a cool, dark place for up to 720 days |
| NET | 1 kg |
| Display on final product | Japanese wasabi extract , cellulose |

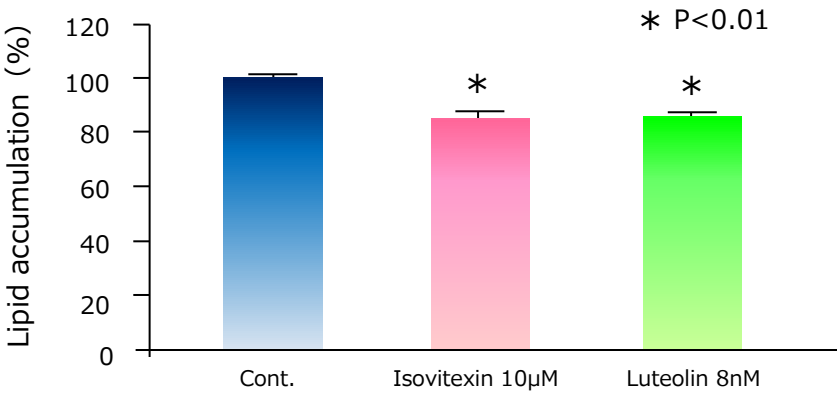
# Cell Study ~ Brown adipocyte ~

After differentiation of rat brown adipocytes in primary culture, add each sample, then observed changes in lipid accumulation and expression analysis of genes related to thermogenesis. (N = 3)

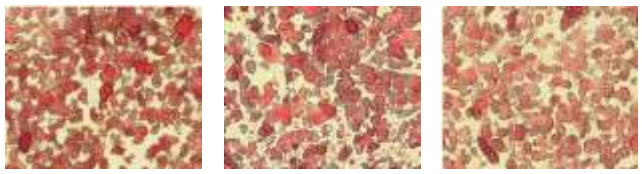
Outsourced research to Cosmo Bio Inc.

## Lipid accumulation

As a evaluation result of fat accumulation of lipid droplet in the cell which stained with Oil Red O, the treatment with isovitexin and luteolin significantly decreased lipid accumulation.



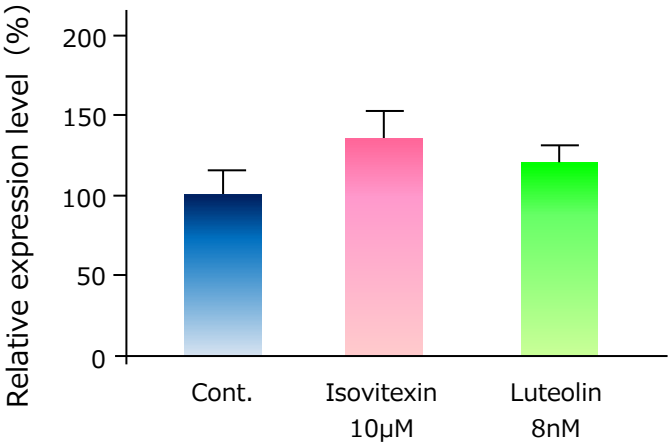

Oil Red O staining



## Gene expression（mRNA）

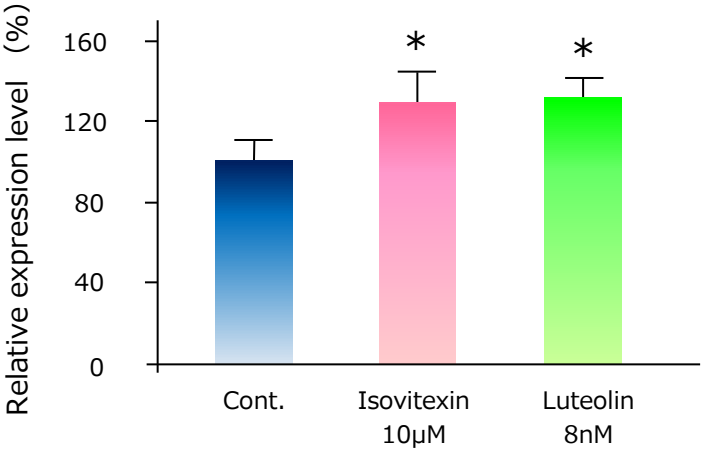
As a result of examination of expression change of genes related to fat burning by real time PCR, mRNA expression of β-3 adrenergic receptor (β-3AR) and UCP-1 was upregulated.
(Only UCP-1 has significant difference)

### β-3AR



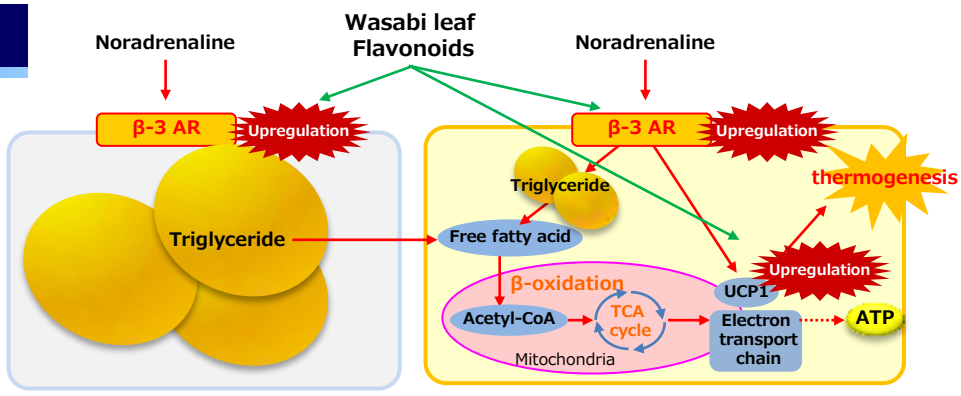

### UCP-1

＊ P<0.05




## Fat-burning mechanism

Wasabi leaf extract displayed the ability to produce free fatty acids easier to remove from both white and brown adipocyte and also promote thermogenesis through the upregulation of β-3 AR and UCP-1.




White adipocyte（WAT）　　Brown adipocyte（BAT）

# Animal Study

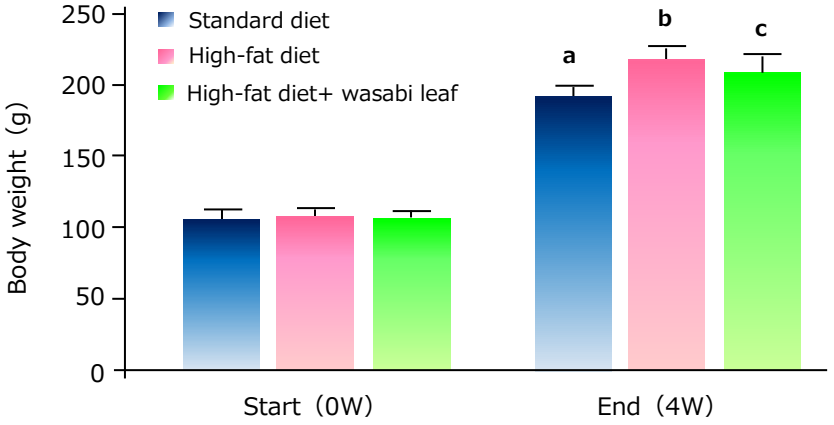
Expression analysis of genes related to body weight shift and white fat cell number and fat burning were carried out by Wistar rats (male, 5 weeks old) that were fed a high fat diet containing 5% wasabi leaf extract throuhout the experimental preriod of 4 week.

*Food Science and Technology Research*,**22**(5),665-671,2016

## Body weight gain inhibition

The final body weight was significantly lower in the wasabi leaf extract group than in the high-fat group. (n=10)

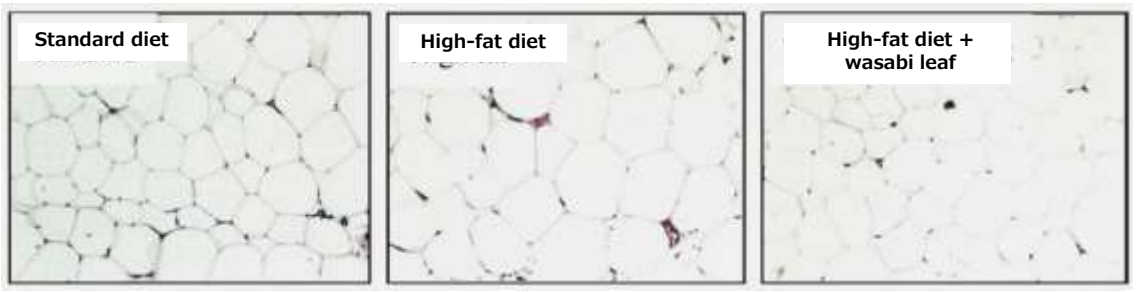
Different letters indicate significant difference.
P<0.05




## White adipocyte hypertrophy inhibition

Mesenteric WAT was stained with hematoxylin and eosin.

In the wasabi leaf extract group white adipose cell growth was inhibited more than in the high-fat group.

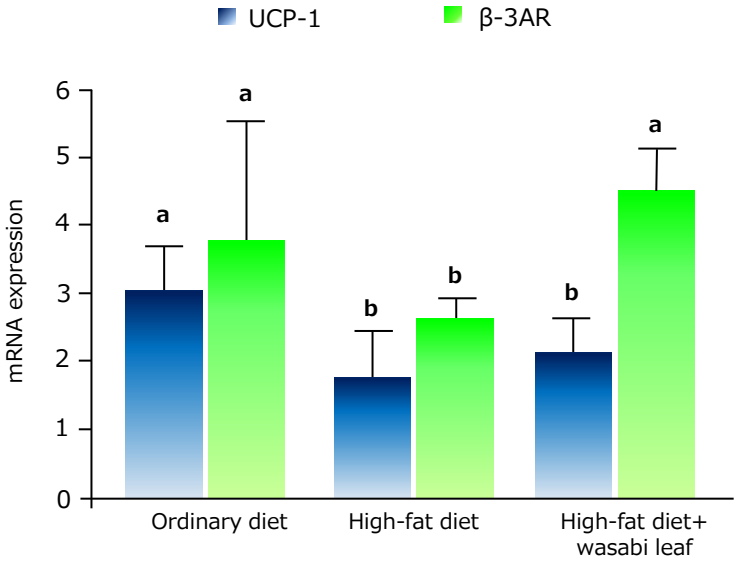



## Gene expression (mRNA)

Gene expression level related to thermogenesis in interscapular BAT was measured by real time PCR.

The expression level of β-3 AR was significantly upregulated in the wasabi leaf extract group compared to the high-fat group. (n=5)

Different letters indicate significant difference. P<0.05




# Clinical trial（Pretest)

In order to research the amount of energy consumption and fat burning efficiency from ingesting Wasaslim™, a human calorimeter was used in a preliminary study to measure the energy consumption, respiratory quotient, and heart rate before and after ingestion.

Subjects (32 and 46 years old) were set to ingest 200 mg of Wasaslim™ per day for 2 weeks, and were fed a calorie controlled meal 3 days before the study. There were two subjects.

As a result of taking Wasaslim™, the potentials for increasing fat burning efficiency and accelerating energy consumption from basal metabolic activity were shown.

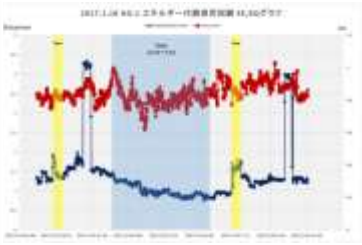



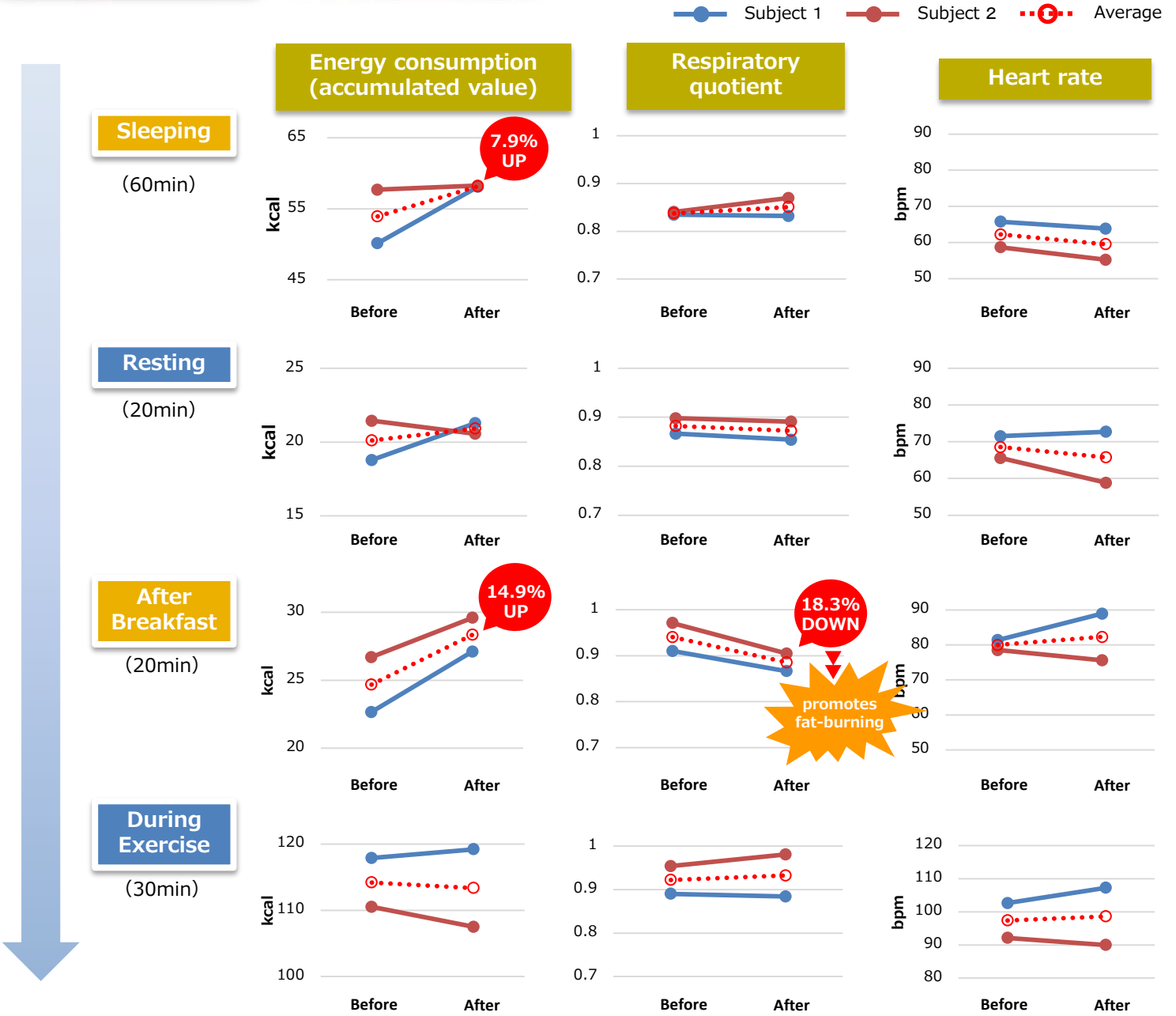
Image of measurement results

For each minute of energy consumption,
VO2, VCO2 (l/min), and RQ are calculated
(from the values of N2, O2, Ar, and CO2 measured with the analyzer)

A human calorimeter is a high airtight indirect calorimeter in which the temperature, humidity, and flow are controlled at a constant.
The room is made with plenty of consideration to livability.
Subjects do not need to wear masks. They only have to live as usual in a comfortable space to measure a small amount of their energy metabolism.

VO2: oxygen consumption VCO2: carbon dioxide production RQ: respiratory quotient

Study conducted at Fuji Medical Science Co., Ltd.



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KPD-EN1809

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supplier