

# Oolong tea and beverage.

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## [Summary]

Oolong tea beverage is very popular in Japan. Since 1981 it mainly has been making the non sugar group of soft drink. The marketing share of soft drink has been changed severely in 1990. The share of non sugar tea group grew up to 23.2% in 2000. (No.1 share) Oolong tea started from a sort of healthy beverage but now oolong tea is multiple beverage that has various and multipurpose functions. They are stopping thirsty, drinking with food, taking a rest and various healthy functions. The demand for non sugar tea was against taking too much sugar and using too much food additives. Especially oolong tea is proved reducing fat by various clinical tests. 15% of subjects lost weight by more than 3kg and 67% of subjects lost weight by more than 1kg. Thickness of subcutaneous fat also decreased by 13.3%. On the other hand the plasma levels of triglyceride and total cholesterol significantly decreased after the ingestion of oolong tea for 6 weeks. And besides it activates autonomic nervous, relaxes much stress, suppresses active oxygen and accelerates elimination of active oxygen. Therefore they said oolong tea has function of prevention from aged for skin and life style related diseases. Oolong tea is not medicine. The merits of drinking oolong tea are that consumers drink it pleasantly every day and get more healthy condition.

## [Key words]

oolong tea, fat, non sugar tea, lipid metabolism, basal metabolism

## [Text]

### Introduction

Oolong tea beverage in Japan started from a sort of healthy beverage in 1981. And it's twenty years old this year. Now it's very popular beverage and Japanese always drink oolong tea about multipurpose soft drink. The marketing share of soft drink has been changed severely since 1990 in Japan. Non sugar tea group grew up to No.1. The share of tea is 28.3% in 2000, non sugar tea is 23.2% and with sugar tea (mainly black tea) is 5.1%. The map of marketing share was changed by tea beverage. Total market volume increased to 44% from 1990 to 2000.

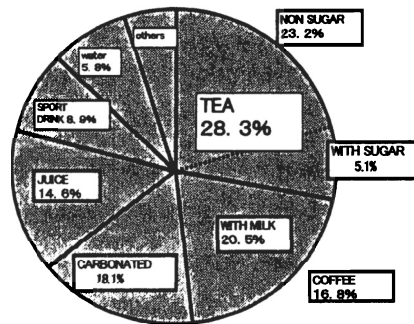


Fig.1 The share of soft drinks in 2000

But tea beverage increased more than 3 times. The marketing share of carbonated beverage is 18.1%, coffee beverage is 16.5%, juice is 14.6%. Carbonated beverage increased from 1960 to 1975.

Coffee beverage increased from 1970

to 1990. Juice increased from 1970

to 1985. Tea beverage is increasing

since 1985, and now growing up.

The share of tea beverage is shown

that oolong tea 29.6%, green tea

23.1%, mixed tea 22.4%, black

tea 18.0% in 2000.

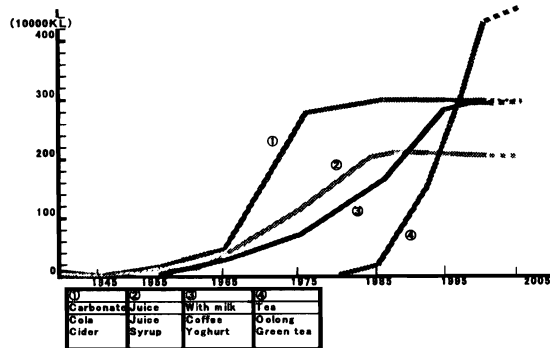


Fig.2 Changes in soft drinks

Motives

Now non sugar tea has various and multipurpose functions. The result of investigation for more than 600 consumers is the following. The purposes of drinking are ①drinking with various foods ② being used to drink ③supplying water ④taking a rest. They selected to ①refresh after drinking ②want to take good taste after drinking ③have mild taste without bitterness and astringency. The selected reason for non sugar tea was against taking too much sugar and using too much food additives. Besides tea was most safety and trustworthy drink in Japan. Since 1950's sugar consumption had been remarkably increasing. After non sugar tea increased very much, using sugar was changed to decrease.

Functions

Fermentation of tea is pointed that enzymes of living tea leaves make various new substances.

Oolong tea is made from various and semi-fermentative tea. Withering, semi-fermentation, stopping activation, rolling leaves, drying and so on. During making oolong tea, hydrolyzed enzymes make like flower aromas. Withering and semi-fermentation make very flowery aromas. They are like rose, jasmine flower, lily of the valley and gardenia. And new oolong tea polyphenols are made from tea catechins, tea catechins are oxidized and connected. The character of aromas are greenish, flowery, roasted and etc.

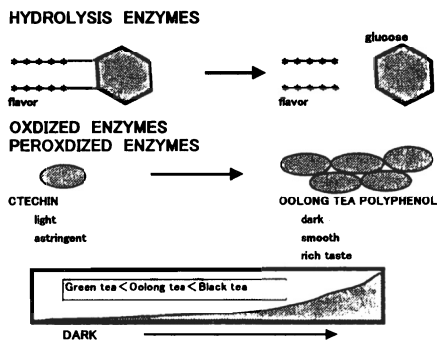


Fig.3 Tea fermentation

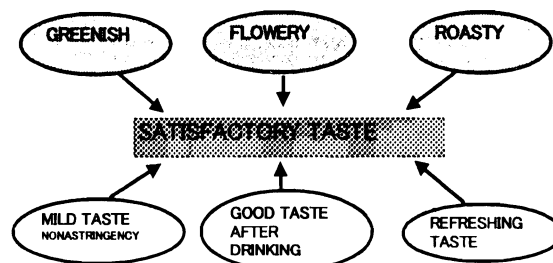


Fig.4 The character of oolong tea

## Healthy functions

This figure is comparison with sugar and fat consumption. Sugar consumption reached peak point but fat consumption is now increasing. The expectation of consumers are the following.

- ① be not fat
- ② keep health
- ③ make beautiful skin
- ④ prevent from life style related diseases

In old China tea was like medicine.

Old chinese books said tea gave us easiness,

made vitality, and prevented from fatness

and aged. The anti-obesity effect of

oolong tea has been known since ancient times.

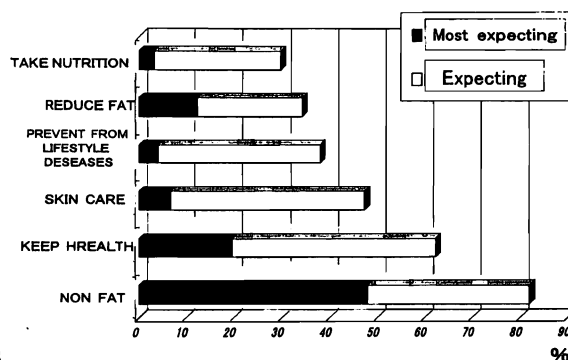


Fig.5 The expectation of consumers

## Clinical test 1

This test is the relation with oolong tea and fatness, oolong tea and fat metabolism. It's examined for simple obese persons in China. The subjects were selected according to the obesity classification by Body Mass Index (BMI) of adult according to the WHO announced in 1990, and the clinical fatness was classified. The BMI method was internationally used, and normal weight was calculated with the following equations.

$$\text{Standard body weight (kg)} = \text{Body height (m)} \times \text{Body height (m)} \times 22$$

$$\text{BMI} = (\text{Object weight} - \text{Standard weight}) / \text{Standard weight} \times 100$$

75 samplers with simple obesity were more than 20% overweight by BMI. Men were 39 persons and women were 36 persons.

The samplers drink oolong tea 8 grams (1 liter) per day for 6 weeks. Remarkable reduction is 3 kilo-grams, valid reduction is 1 kilo-gram and less 1 kilo-gram is invalid. Remarkable reduction is 15%, valid reduction is 52%. Total valid ratio for weight reduction is 67%.

Table.1 Clinical test 1

(1) Samplers	75 persons (more than 20% by Body mass index)				
(2) Index	Body weight, Waist, Subcutaneous fat, Blood pressure, trygliceride, cholesterol, HDL-cholesterol, Blood sugar, Urine sugar				
(3) Evaluation	Remarkable: >3kg Valid: 3Kg ~ ≥1Kg Invalid: 1Kg >				
(4) Drinking method	8g/1 day (4g x 2 / 200ml ~ 300ml)				
(5) Samples	Oolong tea (contrast) Fat reducing tea				
(6) Period	6 weeks				
	men	women	light	medium	heavy
Samplers n=75	39	36	26	22	27

The thickness of subcutaneous fat around waist measured by ultra-sonic wave. Before average 33.1 millimeters changed to after average 28.7 millimeters. (13.3% reduction) about waist before average 96.2 centimeters changed to after average 93.6 centimeters. (2.7% reduction) I'll show the data of uncommon persons about triglyceride (TG) and total cholesterol. (TC) TG average changed from 282.3 mg/dl to 226.1mg/dl. (20% reduction) TC average changed from 259.0 mg/dl to 237.7mg/dl. (8% reduction)

Table2 The result of reducing fat

	REMARKABLE more than 3kg	VALID 1kg~3kg	INVALID less than 1kg
TOTAL(n=75)	15	52	33
LIGHT(n=26)	8	58	35
MEDIUM(n=22)	14	50	36
HEAVY(n=27)	22	48	30

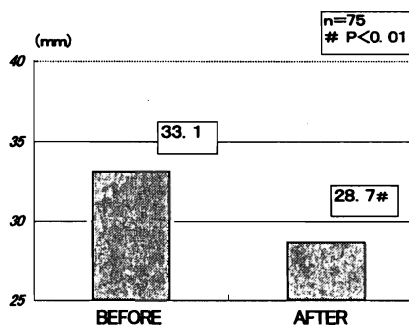


Fig.6 The change of subcutaneous fat

### Clinical test 2

This is the relation with oolong tea drinking and basal metabolism. 12 samplers drink 1.5 liters oolong tea. Samplers take meals that are calculated calories for energy consumption and are measured carbon dioxide discharge per day by room calorimeter. Samplers drink oolong tea added to consumption of 67 kilocalories per 24 hours. The other efforts are prevention

from life style related diseases. The merit of oolong tea is to be able to drink always very much. Oolong tea has strong power to prevent from fat, stress, active oxygen, aged, life style related diseases and other troubles. Autonomic nervous is used to control food and energy consumption. Drinking oolong tea activates autonomic nervous system and accelerates fat metabolism, energy metabolism and basal metabolism. If we get stresses we have much cortisol from corticosterone. Drinking oolong tea makes less cortisol concentration and relaxes feeling from stresses. Stresses have deep relation with beauty care. Stresses has a great influence on secreting woman's hormone and influence skin troubles. Much stress makes active oxygen. Active oxygen makes body substances oxidize and change. Drinking oolong tea reduces to active oxygen and accelerates superoxide dismutase that reduce to active oxygen.

### Result and discussion

Oolong tea is not medicine. The ideal purposes for oolong tea beverage is always able to drink and to keep healthy condition. The expectation of consumers are ①preventing from fatness ②keeping health ③making beautiful skin (preventing from aged for skin) ④preventing from life style related diseases. Sugar consumption reached the peak point but fat consumption is now increasing. Our result suggest that the anti-obesity effect of oolong tea was not caused by diarrhea but caused by promotion of lipid metabolism in peripheral organization and the control of the lipid absorption from the intestines. Therefore oolong tea has the important role to make people healthy and prevent from unhealthy troubles.

Table.3 Clinical test 2

(1) Samplers	12 persons (25 ~ 60 years old)
(2) Index	Energy consumption for 24 hours (3rd day from beginning)
(3) Samples	Oolong tea (contrast) Water
(4) Drinking method	5 cups (1500ml) / 1 day