

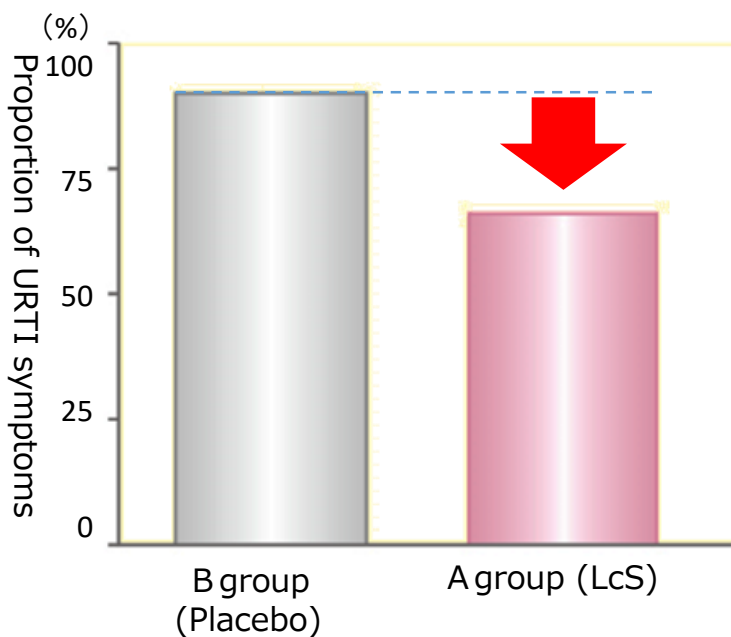
# The Scientific Benefits of Yakult

- 1. Effects of *L.casei* strain Shirota on reducing the risk of Upper Respiratory Tract Infection (URTI) in athletes.**
- 2. *L. casei* strain Shirota suppressed development of colon polyps that were likely to become cancerous.**
- 3. Regular consumption of *L. casei* strain Shirota and soy food have a possibility to reduce the risk of having breast cancer.**
- 4. *L. casei* strain Shirota reduces the risk of bladder cancer.**

# Effects of *L.casei* strain Shirota on reducing the risk of Upper Respiratory Tract Infection (URTI) in athletes

It is said that athletes are susceptible to catch URTI due to temporary determination of the immune system caused by intense training competition or pre-game stress, etc. It has been revealed that continuous consumption of *L.casei* strain Shirota (LcS) reduced the onset risk of URTI.

## Effects of LcS on Reducing the Onset of URTI



### Subjects

Endurance athletes belonging to triathlon, track(middle- or long-distance running), swimming club 84 people  
⇒ divided into 2 groups, each 42people (A group · B group)

### Materials and Methods

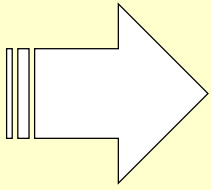
A group consume two bottles of a fermented milk drink containing *L. casei* strain Shirota (LcS, 6.5 billion cells/bottle) per day for 16 weeks, B group consume two bottles of placebo drink for 16 weeks. The onset of URTI and immune parameters were analyzed.

Gleeson M et al.(2011)

**The proportion of subjects of A group who experienced one or more weeks with URTI symptoms during the study period was lower than that of those on placebo.**

\*Placebo : Samples which have the similar taste and appearance as the test samples but do not contain the active ingredient, to evaluate the efficacy of a test.

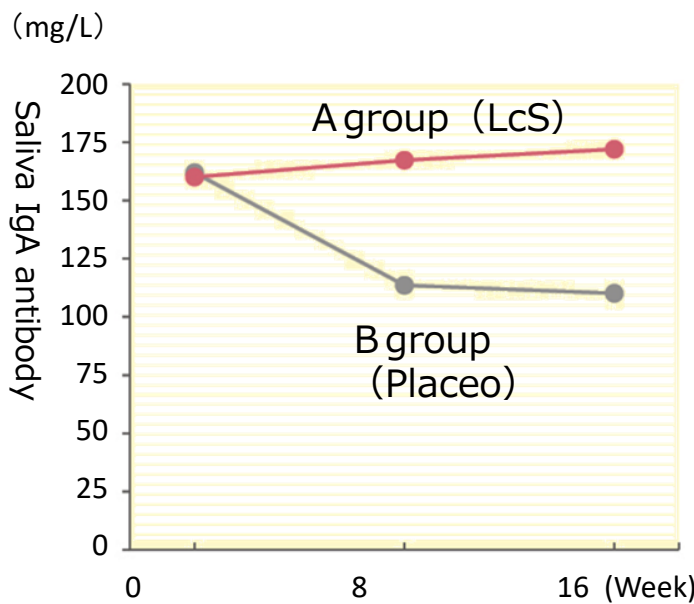
Next :  
Why was the onset risk of URTI reduced?



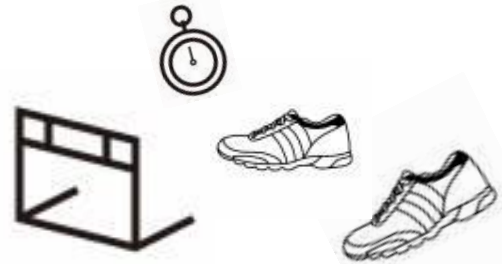
One reason may be LcS supplementation helped maintain saliva IgA concentration

The IgA antibody level in saliva decreased in the B group, consuming placebo, during the study period. On the other hand, it was stably maintained in the A group, consuming LcS. This is thought to be a reason for reducing the risk of URTI in athletes engaging in strenuous exercise on a regular basis.

### The effect of LcS on blood immune parameters of athletes



**The IgA antibody level in saliva was stably maintained in the A group, consuming LcS.**



Gleeson M et al.(2011)

\*IgA antibody : A substances like weapons made by B cells, an immune cell. IgA antibody is found in areas that are exposed to outside such as saliva and airway mucosa. It plays a roll to prevent infection, attaching bacteria and virus.

**Yakult contains 8 billion of *L. casei* strain Shirota  
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Reference :

Gleeson M, et.al., Int J Sport Nutr Exerc Metab. 2011 Feb;21(1):55-64..Daily probiotic's (Lactobacillus casei Shirota) reduction of infection incidence in athletes.

<http://journals.humankinetics.com/doi/abs/10.1123/ijsnem.21.1.55>

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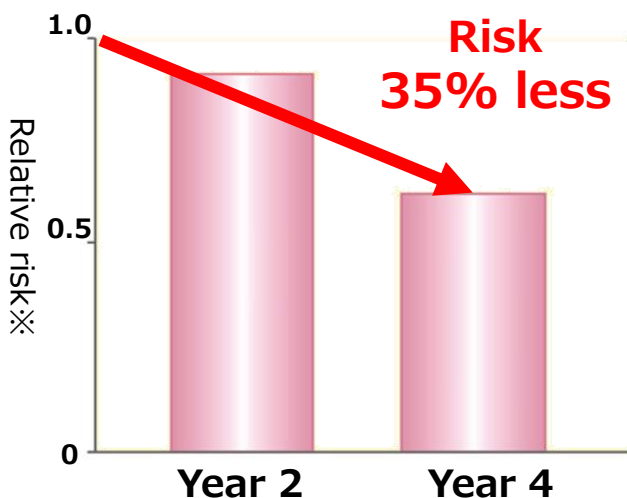
# The Scientific Benefits of Yakult : No.2

## *L. casei* strain Shirota suppressed development of colon polyps that were likely to become cancerous

Patients who had undergone operation to remove colon polyps were given *Lactobacillus casei* strain Shirota everyday after the start of the regimen. The recurrence of polyps was examined after 2 year and 4 years afterward. As a result, the incidence of polyps likely to become cancerous was significantly lower in patient who consumed LcS than in patients who did not. This is the first large-scale clinical study that lactic acid bacteria can prevent colorectal cancer.

This study was conducted as a part of the national research project "A 10-year Strategy for Cancer Conquest", where LcS was selected due to high safety and effectiveness among several lactic acid bacteria.

### Reduction of the risk of colon and rectum cancer by continued consumption of LcS



※A risk of "1" represents the incidence of polyps likely to become cancerous in patients who have not consumed LcS (B group)

#### Subjects

About 400 patients who had undergone operation to remove colon polyps were divided into two groups (A group or B group)

#### Materials and Methods

A group : Given about 30 billion organisms of LcS (preparation of living culture) everyday

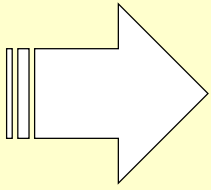
B group : Not given LcS

The recurrence of polyps was examined by colonoscopy 2 years and 4 years after operation.

Ishikawa H et al.(2005) Revised

**LcS significantly suppressed the development of colon polyps that are likely to become cancerous**

Next :  
Relation between colon polyps and colorectal cancer



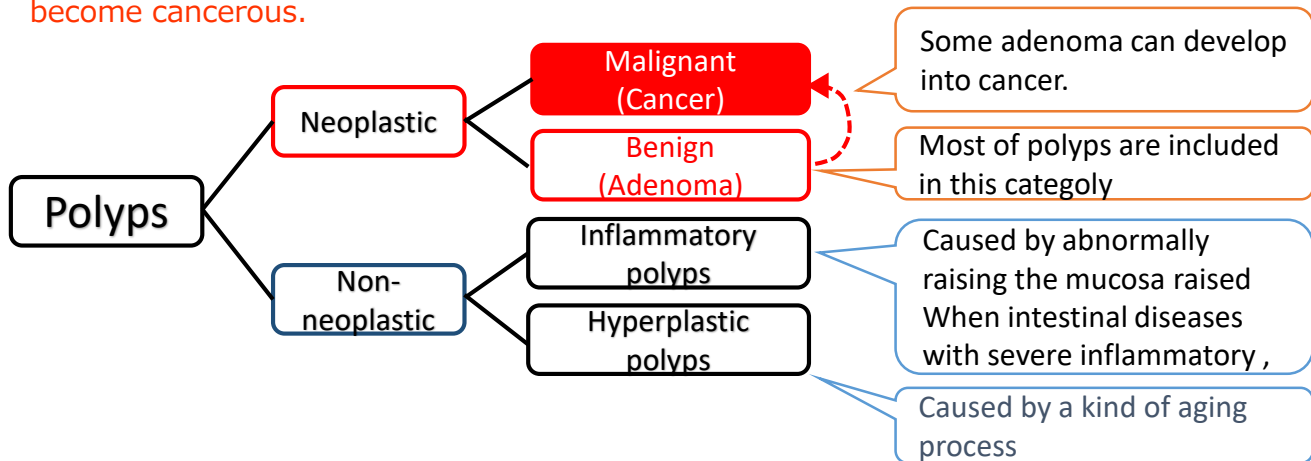
Colon polyps are likely to become cancerous.

## What are colon polyps ?

Those are “warts” that are formed on mucous membranes in the colon. There are two types, “neoplastic” and “non-neoplastic”.

Neoplastic polyps have two types, benign polyps called “adenoma” and malignant polyps called “cancer” .

Approximately 80 % of colon polyps are said to be adenoma. However the adenoma is a preliminary step of becoming cancerous and requires observation because it has risk to become cancerous.



Non-neoplastic polyps has two types, “inflammatory polyps” caused by intestinal inflammatory disease and “hyperplastic polyps” caused by aging process. These have extremely small risk of becoming cancerous.

**Prevent from occurrence of polyps =**  
**Help prevent from occurrence of colorectal cancer**

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Reference :

Ishikawa H, et.al., Int. J. Cancer. 2005 Sep 20;116(5):762-7.. Randomized trial of dietary fiber and Lactobacillus casei administration for prevention of colorectal tumors.

<http://www.ncbi.nlm.nih.gov/pubmed/15828052>

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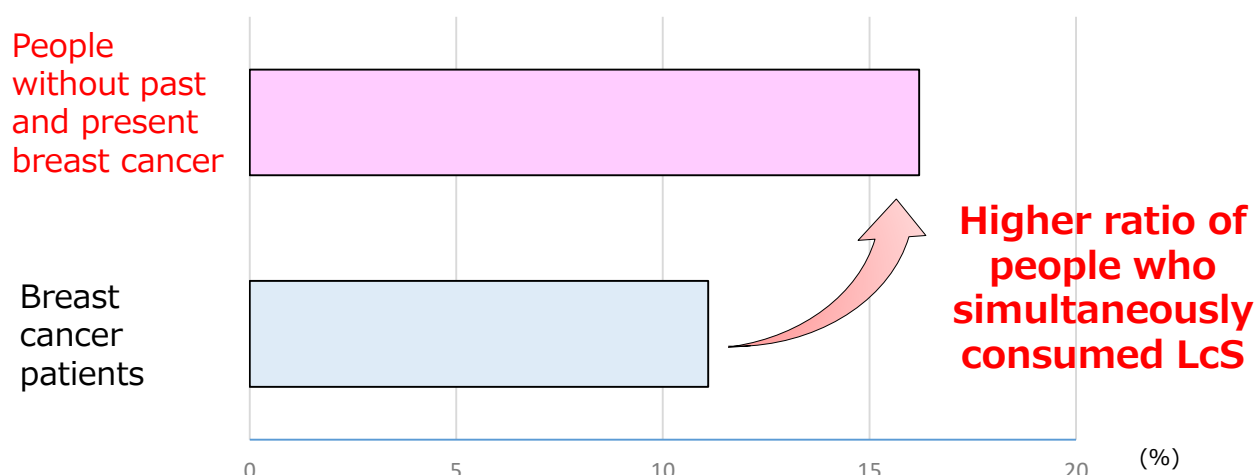
# The Scientific Benefits of Yakult : No.3

## Regular consumption of *L. casei* strain Shirota and soy food have a possibility to reduce the risk of having breast cancer

Breast cancer is caused by various factors such as effects of female hormones, and lifestyles are also pointed out as one of the factors. Dietary habits and amount of soy isoflavone consumption, which was reported to have the preventive effects on breast cancer occurrence, were investigated in patients with breast cancer and people without past and present breast cancer. As a result, relationship among consumption of *Lactobacillus casei* strain Shirota (LcS), soy isoflavone consumption, and the risk of breast cancer occurrence were shown.

### Possibility of preventive effects of LcS on breast cancer 1

**-Ratio of people who consume drinks containing LcS 4 or more times per week -**



#### Subjects

Japanese women aged 40 to 55

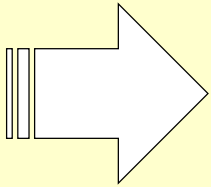
306 patients diagnosed with initial breast cancer and 662 peoples without past and present breast cancer

#### Materials and Methods

Past consumption of dairy food and soy foods were investigated. The relationship between these factors and the risk of breast cancer occurrence were examined.

Toi M et al.(2013) Revised

Next :  
Combinational effect  
of LcS and soy  
isoflavones



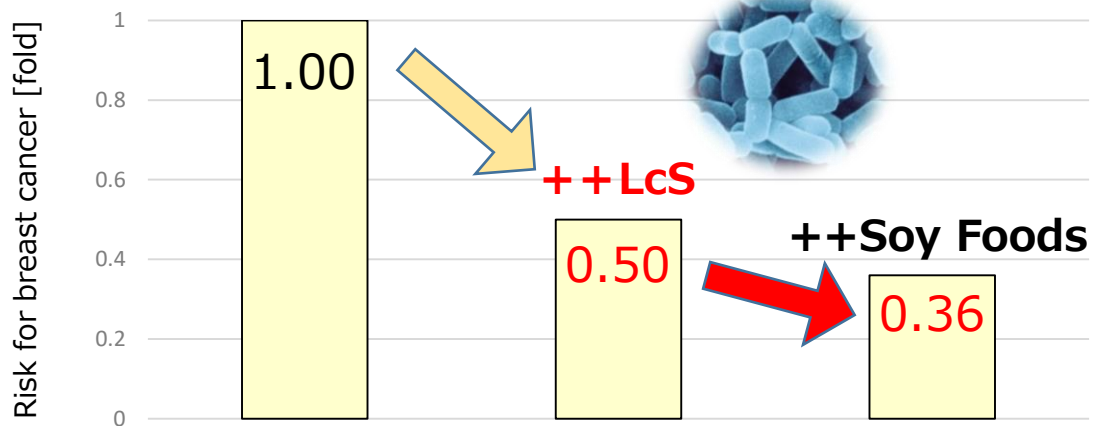
High consumption of both LcS and soy isoflavones leads much lower risk for breast cancer

## Possibility of preventive effects of LcS on breast cancer 2

-Risk for breast cancer (A risk of "1" represents the risk of low consumption of both LcS and soy foods) -

Subjects, material and methods are the same to the above

Toi M et al.(2013) revised



Average amount of soy isoflavones intake	<b>Lower</b> (>18.76 mg/day)	<b>Lower</b> (>18.76 mg/day)	<b>Higher</b> (>43.75 mg/day)
Average frequency of LcS intake	<b>Lower</b> (<4 times/week)	<b>Higher</b> (>4 times/week)	<b>Higher</b> (>4 times/week)



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Reference :

Masakazu Toi, et.al., Current Nutrition & Food Science, 9 3 1573-4013 (2013). Probiotic beverage with soy isoflavone consumption for breast cancer prevention: a case-controlled study.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3744907/>

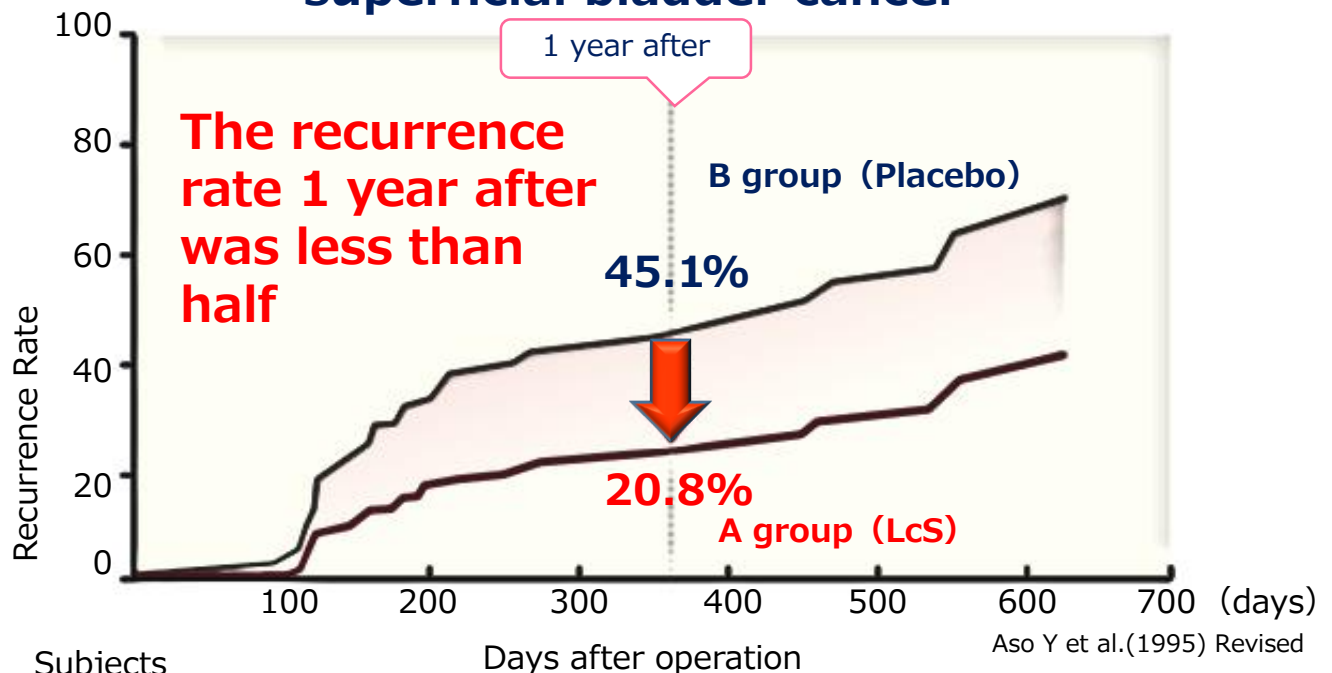
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## *L. casei* strain Shirota reduces the risk of bladder cancer.

Patients who undergone operations for superficial bladder cancers were given about 30 billion organisms of *L. casei* strain Shirota (LcS) or placebo for more than a year, and the recurrence rate of the cancer was examined. Compared with patients who consumed the placebo, the recurrence rate 1 year after was less than half in patients who consumed LcS.

(Superficial bladder cancer can be removed by endoscopic surgery. However, it frequently recurs after the operation, and becomes more malignant as recurrence is repeated.

### The suppressive effect of LcS on the recurrence of superficial bladder cancer



#### Subjects

138 Patients who had undergone operations for superficial bladder cancer  
⇒ Divided into two groups, A group and B group.

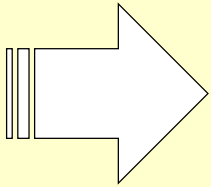
#### Materials and Methods

A group was given about 30 billion organism of preparation of living LcS everyday for a year or until the cancer recurred, B group was given a placebo\*. The recurrence incidence of the cancer was examined.

\*Placebo : Samples which have the similar taste and appearance as the test samples but do not contain the active ingredient, to evaluate the efficacy of a test.

Next :  
Relationship between  
LcS habitual  
consumption and  
bladder cancer

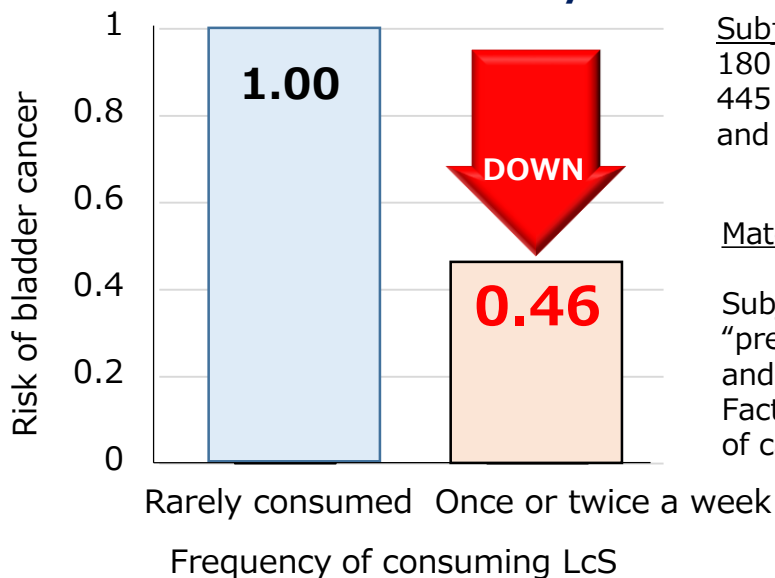




Habitual intake of LcS reduces the risk of becoming bladder cancer.

The below graph shows a retrospective study that patients with bladder cancer or healthy volunteers were asked about their habits of taking fermented milk drinks and lifestyle for the past 10-15 years. As a result, the risk of bladder cancer was significantly lower than approximately half in people who habitually consumed fermented milk drinks containing LcS once or twice a week than in people who rarely consumed it.

### Reduction of the risk of bladder cancer by LcS (A risk of "1.00" represents the risk of bladder cancer in people who rarely consumed LcS)



#### Subjects

180 patients with bladder cancer and 445 healthy volunteers whose sex and ages were similar to the patients

#### Materials and Methods

Subjects were asked about their "present" dietary habits and lifestyles and ones "the past 10-15 years ago". Factors that may relate to occurrence of cancer were examined.

Ohashi Y et al.(2002)

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Reference :

Aso Y, et.al., Eur Urol, 27 2 104-109 (1995), 27 2 104-109 (1995). Preventive effect of a Lactobacillus casei preparation on the recurrence of superficial bladder cancer in a double-blind trial. The BLP Study Group.

<http://content.karger.com/ProdukteDB/produkte.asp?Doi=58450>

Ohashi Y, et.al., Urol. Int., 68 273-280 (2002). Habitual intake of lactic acid bacteria and risk reduction of bladder cancer.

<http://content.karger.com/ProdukteDB/produkte.asp?Doi=58450>

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