

## The Effect of Shark on Anticancer Action

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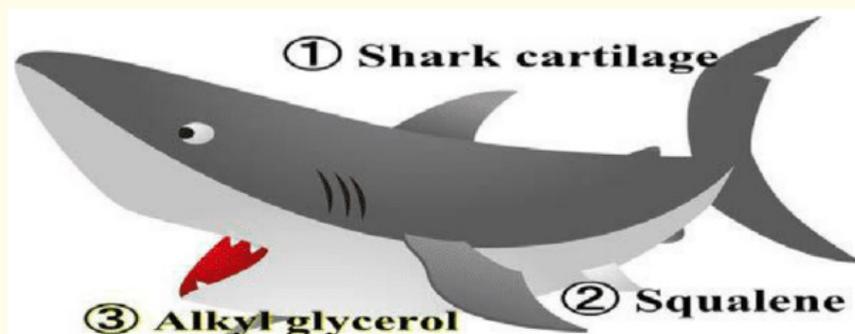
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### Overview

Known shark anticancer ingredient component

1. Shark cartilage
2. Squalene
3. Alkyl glycerol



*Figure 1*

### Use of anti-cancer component of shark

- Shark cartilage: chondroitin sulfate Meals: Shark's fin of Chinese cuisine etc.
- Products from liver components of sharks: squalene, Alkyl glycerol (Ether lipid).
- Products: Shark Liver Oil Drop, Cosmetic Ingredients.

### Types of main fatty acids of shark liver oil

1. Saturated fatty acid
  - Myristic acid
  - Palmitic acid
  - Stearic acid

2. Monovalent unsaturated fatty acid
  - Palmitoleic acid
  - Oleic acid
3. Polyunsaturated fatty acid
  - Linoleic acid
  - alpha-linolenic acid
  - Stearidonic acid
  - Eicosapentaenoic acid (EPA)
  - Docosapentaenoic acid (DPA)
  - Docosahexaenoic acid (DHA)

**Region of habit of eating sharks in Japan:**

Miyagi Prefecture Kesenuma City, Hiroshima Prefecture Miyoshi City, Hiroshima Prefecture Shobara City (3 areas).

In this area, from long ago to the present age, they were eating shark meat.

Generally shark meat had an ammonia smell and was avoided as food.

Therefore, it was not used as edible in many areas.

In this area, now they reduce ammonia odor.

They are eating as sashimi, Deep-fried shark meat, Boiled shark meat.



**Figure 2**

However, most of shark cartilage fin and liver squalene known as shark’s anticancer action are not ingested.

There is a significant difference in the death of cancer in the Japanese mouth dynamic survey of the cause of death in this area.

<b>Vital Statistics in JAPAN: Comparison by causes of death (comparison of cancer fatalities)</b>			
Region	Kesenuma	Miyoshi	Shobara
Cancer death % in this area	26.5% (2014)	25.3% (2006)	23.4% (2015)
Cancer death % in Japan	28.9% (2014)	30.4% (2006)	28.7% (2015)
Difference	2.4%	5.1%	5.3%

**Source:** Vital Statistics in JAPAN  
 Vital Statistics in Shobara-shi  
 Vital Statistics in Miyoshi-shi  
 Vital Statistics in Kesenuma-shi

Therefore, does shark meat have no anticancer effect?

### Muscle components of sharks

#### Imidazole dipeptide

As representative components of imidazole dipeptide. Carnosine ( $\beta$ -alanyl-L-histidine) and Anserine ( $\beta$ -alanyl-3-methyl-L-histidine), Barenin ( $N\alpha$  -  $\beta$  - Alanyl - 1 - methyl - L - histidine). It has been known.

For carnosine, there are literature revealing anti-cancer action.

#### Anticancer action of carnosine

##### **Carnosine and Cancer**

**Frank Gaunitz, Henry Oppermann and Alan Hipkiss**

The naturally occurring dipeptide carnosine ( $\beta$ -alanyl-l-histidine) was discovered more than 100 years ago. Since then, many physiological functions have been ascribed to it but its biological role still remains enigmatic. Among its remarkable features, its potential to inhibit the growth of neoplastic cells has gained increasing attention during the last two decades, and new experimental data have opened a windows for a deeper understanding on the physiological mechanisms responsible for carnosine's antiproliferative potential in cancer cells.

### Conclusion

Sharks are disliked among sea creatures, but they are beneficial marine products for mankind.

From now on, I believe that shark's useful ingredients as well as shark's anticancer effect will increase contribution to humanity.

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