

<Marine Organism Rearing Log>

9 AM, December 15, 2023

Weather: Rainy

Water temperature: 17.2°C

The amount of fruit in a drink containing 50% fruit jelly and 80% fruit juice is not 130%. This is usually expressed as the amount of juice per unit volume or unit weight. We calculate the becquerels in 1kg of flounder (bodily fluid and muscle) in a similar fashion.

<The next report will be on December 18>

**What is the concentration of fruit juice in the cup?**

80% fruit juice  
50% fruit jelly

Expressed as the amount of juice per unit volume or unit weight

Assuming that the juice concentration is a percentage of the weight and the density of both the juice and jelly is 1g/ml, the same as water, the calculations is as follows:  
The amount of fruit juice in 500ml of drink with 80% concentrate= $500g \times 0.8 = 400g$   
The amount of fruit in 30g of jelly with 50% concentrated jelly= $30g \times 0.5 = 15g$

Since the total amount of fruit in 530g of the drink in this cup is 415g, the percentage of fruit in the drink is:  $415g \div 530g \approx 0.78 = 78\%$

**Let's calculate the radioactivity of tritium in 1[kg] of the edible part (fillet) of a flounder ①**

We will use the following rearing test results for our calculation:  
Tritium (FWT) concentration in bodily fluid: **1,300Bq/L**  
Tritium (OBT) concentration in muscle: **200Bq/L**  
The weight ratio of bodily fluid to muscle (dry) is assumed to be **75%:25%**.  
The density of all liquids, including bodily fluids and seawater: **1g/ml**

First,  
let's calculate the concentration of tritium in 750g (=ml) of bodily fluid.  
The tritium concentration in one liter of body fluid is 1,300Bq/L, so  
 $1,300Bq/L \times (750/1,000) = 975Bq$

Next, let's calculate the concentration of tritium in muscle (dry)

**Let's calculate the radioactivity of tritium in 1kg of the edible part (fillet) of a flounder.**

Based on the ratios of carbon, nitrogen, and hydrogen in proteins from past literature, we know that burning 1kg of dried flounder muscle produces 0.7kg (=L) of water.  
The tritium concentration (OBT) in the water produced by this combustion (hereinafter referred to as, "combusted water") is 200Bq/L.  
The radioactivity of tritium in this combusted water is:  
 $200Bq/L \times 0.7L = 140Bq$   
In other words, the radioactivity of tritium contained in 1kg of dried muscle is:  
 $140Bq (= Bq/kg)$   
Since the dried weight of 1kg of the edible portion of a flounder is 250g, the radioactivity of tritium in this part is:  
 $140Bq \times (250g/1,000g) = 35Bq$   
If these two are added together, the amount of tritium in 1kg of the edible part (fillet) is:  
 $975Bq + 35Bq = 1,010Bq = 1,010Bq/kg$

Tritium in 1kg of the edible part of a flounder:  
**1,010Bq/kg**

➔

Tritium in rearing seawater  
**1,300Bq/L ((Bq/kg))**

**アワビの死亡および調査引き上げ数**

	死亡		調査引き上げ	
	12/8-12/14 (数)	生残率(%、累積)	12/8-12/14 (数)	累積(数)
通常海水①	3	40.6	0	0
通常海水②	1	35.5	0	0
処理水添加①	1	44.3	0	0
処理水添加②	4	35.5	0	2

\*ヒラメの死亡はありませんでした  
\*集計に正確を期すため前週金曜～本曜日で死亡および調査引き上げ数を集計しています

The number of dead abalone / removed for research

	No. of dead abalone		Removed for research	
	12/8-12/14 (No.)	Survival Rate (%、accumulated)	12/8-12/14 (No.)	Accumulated (No.)
Regular seawater ①	3	40.6	0	0
Regular seawater ②	1	35.5	0	0
ALPS treated water added ①	1	44.3	0	0
ALPS treated water added ②	4	35.5	0	2

\* No flounder deaths

\* For accuracy, counted from Friday of the previous week to Thursday