

## AllerSnap® Studies with Seafood and Fish Proteins

### Purpose

AllerSnap® tests provide a quick way to detect protein residues, including allergenic residues. While commonly used to verify the hygiene of surfaces, AllerSnap tests can also be run with food samples. The following two studies show the level of detection of protein from seafood sources by AllerSnap devices.

### Study 1: Protein Analysis of Crustacea and Salmon

#### Method

Dilutions of protein foods were made and added to AllerSnap test devices, activated and incubated in Hygiena's Dry Block Incubator (Product No. INCUBATOR) at 37 °C for 30 minutes. The color change was recorded. "YES" indicates the color in the test device changed to purple.

#### Protein Analysis

**Table 1. Detection of Seafood Proteins Using AllerSnap Devices.**

Dilution	Detection level (ppm)	AllerSnap testing (37 °C)		
		Crustacea		Salmon
		10 µL of sample	100 µL of sample	10 µL of sample
Neat	1,000,000	Yes	Yes	Yes
1 in 10	100,000	Yes	Yes	Yes
1 in 100	10,000	Yes	Yes	Yes
1 in 1,000	1,000	—	Yes	—
1 in 10,000	100	—	Yes	—
1 in 100,000	10	—	Yes	—

#### Conclusion

AllerSnap test devices detect seafood proteins at 37 °C at dilutions of 1:10<sup>5</sup> and 1:10<sup>6</sup>, depending on the protein source.

### Study 2: Detectability of Crab Sticks

A large study including a variety of foodstuffs and multiple test devices was conducted to emulate the detection of allergenic foods. Here, we focus on a subset of the data for the detection of allergenic protein in crab sticks using AllerSnap devices.

#### Preparation of Foodstuff

- 10 g of crab sticks was added to a sterile 150 mL plastic pot.
- PFW (Pyrogen Free Water) was added to the 100 mL line on the pot.
- The food and water mix was then homogenized and shaken for 60 minutes at 600 rpm to create a homogenate.
- The supernatant from the food homogenate was used in a dilution series (Table 2) to estimate which dilutions would be detected by AllerSnap devices.



**Table 2. Dilution Series.**

Dilution (%)	Concentration
10	10 pph (parts per hundred)
1	1 pph
0.1	1 ppt (parts per thousand)
0.01	100 ppm (parts per million)
0.001	10 ppm
0.0001	1 ppm
0.00001	100 ppb (parts per billion)
0.000001	10 ppb

**Detection**

- 10 µL of each sample dilution was added to a separate AllerSnap device.
- AllerSnap protein assays were run at 37 °C in a heat block for 10 minutes. Color changes were visually assessed according to a color scale.

**Table 3. Detection of Crab Stick Samples Using AllerSnap Devices.**

Dilution (%)	Crab sticks*	AllerSnap results (37 °C)
<b>10</b>	<b>10 pph</b>	<b>Fail</b>
<b>1</b>	<b>1 pph</b>	<b>Fail</b>
<b>0.1</b>	<b>1 ppt</b>	<b>Caution</b>
0.01	100 ppm	Pass
0.001	10 ppm	Pass
0.0001	1 ppm	Pass
0.00001	100 ppb	Pass
0.000001	10 ppb	Pass

\* pph = parts per hundred, ppt = parts per thousand, ppm = parts per million, ppb = parts per billion.

**Conclusions**

AllerSnap tests detect down to 1 part per thousand of protein from Crab Sticks.

**Summary**

AllerSnap tests can detect seafood protein as well as other protein. The detection level depends on the protein source but is generally parts per hundred or parts per thousand.