Performance Verification of an ELISA-based Assay Fish Allergen on Different Environmental Surfaces and Clean-in-Place (CIP) Rinse water

Mabel NG , Lee Jiuan CHIN, Jessie LEE, Yan Zhi TAN and Chloe NG
Romer Labs Singapore Pte. Ltd., Singapore, Singapore

Objective

Fish is included in human consumption around the world and contained many vitamins and minerals for healthy diet. In addition to milk, eggs, peanuts, tree nuts, soy, wheat and seafood, fish is counted among the most frequent triggers of IgE-mediated food allergies. Fish allergy prevalence could range from up to 7%. And study show it is more frequent in Asia.

There are many fish ingredients in each Asian food and condiments.
As there are changes of recipes in manufacturing plant, there is a possibility of fish allergen found in matrixes that do not contain fish. The causes are mainly due to insufficient cleaning and testing of allergens between change of recipes.
In this study, we determine the recovery in spiked rinses and recovery on swabs on different surfaces, steel tray, Teflon coated tray and plastic tray. The possible effects of freezing the solution for 4 days after swabbing are also considered, as swab samples maybe stored frozen if there is a delay before they can be tested by ELISA.

Methods

Day 0

Rinse

The rinse (DI water) is fortified with low and high levels of fish spike.

Surface swabbing

Each of the three surfaces (steel tray, Teflon coated tray and plastic tray) are sectioned into 18 cm x 25 cm.
A negative control (buffer) , spiked solutions of low and high fish protein level were applied using micropipette to each of the 3 surfaces and left to dry for 2 hours at room temperature to each of the 3 surfaces. The swab and rinse samples were kept frozen for 4 days before analysis.

Day 4

Rinse

Frozen rinse were removed from the freezer and defrosted at room temperature .Rinse water(DI water) is fortified with low and high levels of fish spike again.

Surface swabbing

Frozen swabs were removed from the freezer and defrosted at room temperature.
Each of the three surfaces (steel tray, Teflon coated tray and plastic tray) are sectioned into 18 cm x 25 cm.
A negative control (buffer) , spiked solutions of low and high fish protein level were applied using micropipette to each of the 3 surfaces and left to dry for 2 hours at room temperature to each of the 3 surfaces.
The AgraQuant® Allergen swabbing kit is used to swab on the surface and AgraQuant® fish allergen is used to tested on the recovery of fish allergen.

Results and Conclusion

Swabs & Rinse

Surface	*Low Level Recovery %*	*CV%*	*High level Recovery %*	*CV%*	*Negative Control*
Plastic	107.6	2.9	94.7	0.4	ND
Teflon	106.2	4.4	94.4	3.4	ND
Steel	96.8	13.5	99.9	6	ND
Samples	*Low Level Recovery %*	*CV%*	*High level Recovery %*	*CV%*	*Negative Control*
Rinse	90.5	8	105.5	17.2	ND

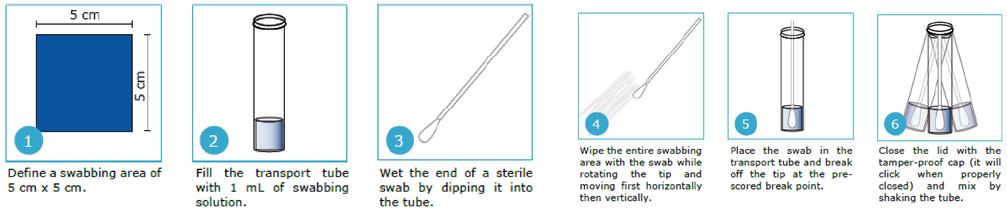
Frozen Swabs & Rinse

Surface	Low Level Recovery %	CV%	High level Recovery %	CV%	Negative Control
Plastic	117.6	2.8	84.7	5.3	ND
Teflon	126.2	13.4	84.4	3.7	ND
Steel	106.8	1.1	98.0	4.9	ND
Samples	Low Level Recovery %	CV%	High level Recovery %	CV%	Negative Control
Rinse	88.5	14.1	108.5	8.6	ND

Results and conclusion: Rinse water fortified with fish allergen recovery is between 80-120%. Fish Allergens can be recovered from all surfaces (Plastic , Telfon and Steel).
Manufacturing plant with change recipes of fish and non- fish ingredients can utilize the swabbing kit for sampling environmental fish allergens and test with ELISA fish kit.
Storing rinse water and swabs at -18C for 4 days has littles effect on fish allergen recovery. This is good news for companies whom may not have testing facilities on-site.
No contamination/interference was found in the negative control.

Significance: The AgraQuant® Allergen Swabbing kit and Fish Allergen plus offers a rapid and reliable tool for testing fish allergen on environmental surfaces and Clean- in- place Rinse Water

Protocol for allergen swabbing



ALLERGENS
AgraQuant®
Allergen ELISA Test Kits

Correspondence should be addressed to:
Hwee Chen Ng Mabel
Romer Labs Singapore Pte Ltd
E- Centre@Redhill S(159471)
Mabel.ng@romerlabs.com
www.romerlabs.com

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