

CONTROL OF FOOD ALLERGENS IN PREPACKAGED FOODS IN ARGENTINA: A PRELIMINARY STUDY



López Laura B.*, Binaghi M. Julieta*, Cinalli Mariana**, Cetrángolo Mercedes**, López María Cristina**.

*Department of Food Chemistry, Pharmacy and Biochemistry Faculty, Buenos Aires University, Junín 956, Buenos Aires, Argentina. e-mail: laulop@ffyb.uba.ar ** Cereals and Oilseeds Center, National Institute of Industrial Technology, General Paz 5445. San Martín,

Buenos Aires Province, Argentina. e-mail: kitty@inti.gob.ar

Buenos Aires Province, Argentina. e-mail: kitty@inti.gob.ar

INTRODUCTION

In September 2009, the National Food Commission, CONAL, (Comisión Nacional de Alimentos), the competent Argentine authority that can modify the Argentine Food Code CAA (Código Alimentario Argentino), approved a Regulation for "The allergens that must be declared in the label of foods". These allergens must be declared after the ingredients' list of prepackaged foods when they are present as ingredients or ingredients' components. They are: cereals containing gluten, crustacean, eggs, fish, peanuts, soybeans, milk, tree nuts, mustard, or their derivatives, and SO₂ and sulphites. Although this regulation has not come into force yet, some manufacturers are voluntarily labeling their products with statements such as "Contain...", "May contain..." or "This product is manufactured in the same line..."

OBJECTIVES

The aim of this work was to make a review of such products and to select randomly 14 foods that bear this kind of statement on their labels to see whether the statements are truthful, and at which concentration the allergens are present.

MATERIALS AND METHODS

The prepackaged foods selected were: cookies, crackers, candies, vegetable stock cubes, dry mixes, snacks and dry noodles. Their ingredients and the corresponding statements of allergens are described in the table below. Amongst the allergens declared on the labels, eggs, casein, β lactoglobulin and soya were analyzed using commercial kits from r-Biopharm (egg, β lactoglobuline and casein) and Gen probe (soya).

RESULTS AND DISCUSSION

Description of the product	Ingredients	Statements of allergens	ELISA egg ppm*	ELISA β lactoglobuline ppm*	ELISA Casein ppm*	ELISA Soya ppm*
Sponge cake mix	Flour, sugar, hydrogenated oil, starch, salt, flavouring, raising agents: INS 500ii y 541i, emulsifier INS 477.	This product is manufactured with the same equipment that processes products that contain egg, milk and soya bean. Contains gluten.	< 0,50	< 0,20	< 0,50	5,00
White chocolate flavoured dessert mix	Sugar, starch, salt, stabilizer (carrageenan), colours: tartrazine, sunset yellow and flavouring.	Contains traces of wheat, gluten, milk, soybean, barley, egg, peanut and sesame.	< 0,50	0,20	< 0,50	< 0,30
Crackers with bran, no salt added	Enriched wheat flour, high oleic sunflower oil, wheat bran (6%), glucose syrup, sugar, oat fiber, salt, raising agents: ammonium bicarbonate, sodium bicarbonate, emulsifier: <u>soybean lecithin</u> .	Contains: wheat, gluten, oat, soybean, traces of almond, barley, egg, milk, and peanut.	< 0,50	0,23	< 0,12	10,65
Vegetable stock cubes	Salt, vegetable fat, corn starch, yeast extract, sugar, parsley, celery, red pepper, black pepper, leek, flavour enhancers (monosodium glutamate and disodium inosinate), flavouring, colours (cúrcuma and caramel), acidulants (citric acid).	Contains gluten. Contains soybean. Contains traces of egg, milk and mustard.	< 0,50	0,70	< 0,12	< 0,30
Chocolate flavoured cookies	Enriched common wheat flour, sugar, bovine fat, cocoa powder, glucose syrup, salt, raising agents: ammonium bicarbonate, sodium bicarbonate, colour caramel (E 150d), emulsifier: <u>soybean lecithin</u> and flavouring.	Contains: wheat, gluten, soybean, traces of almond, egg, milk, peanut and nut.	< 0,50	0,40	0,80	5,25
Bran crackers	Enriched common wheat flour, high oleic sunflower oil, glucose syrup, corn bran (3%), wheat bran (2%), malt extract, salt, raising agents: ammonium bicarbonate, sodium bicarbonate; emulsifier: <u>soybean lecithin</u> , flour improver: sodium metabisulfite, flavouring.	Contains wheat, gluten, barley, soybean, traces of egg, milk, peanut and sesame.	< 0,50	< 0,20	< 0,50	4,20
Crackers	Enriched common wheat, bovine fat, salt, malt extract, glucose syrup, yeast, emulsifier: <u>soybean lecithin</u> , flavouring.	Contains wheat, gluten, barley, soybean, traces of almond, egg, milk and peanut.	< 0,50	< 0,20	< 0,50	15,22
Jelly mix	Sugar, gelatine, salt, vitamin C, acidulant: INS 297, raspberry flavouring, sweeteners: INS 950 y 951, colours INS: 123 y 132.	Without declaration of allergens	< 0,50	< 0,20	< 0,12	< 0,30
Sandwich cookies with lemon filling, chocolate coated	Sugar, vegetable oil, hydrogenated vegetable oil, cocoa powder, Common wheat flour enriched, salt, emulsifier: <u>soybean lecithin</u> , polyglycerol polirricinoleato, raising agents: ammonium bicarbonate, sodium bicarbonate, natural flavouring: lemon, nature identical flavouring: vanillin, acidulant: citric acid.	Contains gluten. Contains wheat products. This product is produced with the same equipment that processes milk, peanut, almonds and hazelnuts.	---	12,90	17,20	< 0,30
Chicken soup with noodles mix	Noodles (with enriched common wheat flour), salt, corn starch, dehydrated vegetables (onion, carrot, parsley and leek), chicken meat and fat (with BHT antioxidant), sugar, yeast extract, flavour enhanced (INS 621, INS 631, INS 627), spice (turmeric), colour (caramel), flavouring.	May contain traces of celery, milk and egg.	---	1,00	9,90	---
chewy sweet, fruit flavour	Glucose, sugar, hydrogenated vegetable oil, maltodextrin, ACI (citric acid), EMU (<u>lecithin</u>), flavouring and colours: allura red, sunset yellow and brilliant blue.	Allergy information: produced in a factory that processes dairy products, soya, peanuts and almonds	---	< 0,20	< 0,12	< 1,25
Snack stick, bacon flavour	Common wheat flour enriched according to law 25630, vegetable oil, corn starch, salt, yeast, raising agents: INS500ii, flavouring agent (salt, INS621).	This product may contain traces of dairy products	---	< 0,20	< 0,50	---
Durum wheat semolina pasta	Durum wheat semolina	This product is produced with an equipment that processes pasta made with egg. Contains gluten.	< 0,50	---	---	---

Egg proteins were detected in one product (concentration 4.50 ppm), β lactoglobulin was detected in 6 products (concentrations between 0.20 and 12.90 ppm), casein was detected in 3 products (concentration between 0.80 and 17.20 ppm) and soya proteins were detected in 5 products (concentrations between 4.20 and 15.22 ppm), 4 of them declared lecithin in their list of ingredients.

According to the methodology used in this work, the allergen content per portion of food for some of these products would be:

176 μ g of egg protein for Italian durum wheat semolina pasta (portion : 80 gr).

12 μ g of β lactoglobulin and 24 μ g of casein for chocolate flavoured cookies (portion: 30 gr).

284 μ g of β lactoglobulin and 378 μ g of casein for sandwich cookies with lemon filling, chocolate coated (portion: 22 gr).

457 μ g of soya proteins for crackers (portion: 30 gr).

200 μ g of soya proteins for sponge cake mix (portion: 40 gr).

The effect of these levels of allergens on allergic people will depend on their individual sensitivity.

* Limits of detection and limits of quantification of the kits: Egg LD: 0,27 ppm / LQ: 0,5 ppm β lactoglobuline LD: 0,2 ppm / LQ: 0,5 ppm Casein LD: 0,12 ppm / LQ: 0,5 ppm Soya LD: 0,3 ppm LQ: 1,25 ppm

According to the limits of detection of the tests used in this work, the results obtained show that some of the allergens declared on the food labels are not actually present in the product. It is very important that manufacturers of prepackaged foods do not use precautionary allergen labeling without a previous strict control of the possible presence of any of them. In other words the industry should clearly declare only allergens that have been detected in the food product. This practice would increase the options that the allergic consumers have when choosing food products.

This work was financed by UBACyT Project B 418 and INTI Cereals and Oilseeds Center.