Allergen labelling in meat, dairy and cereal products from the Serbian market

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Abstract. Allergens in food are a great health risk, because of the ratio of severity of problems compared to small amounts of ingested allergen. Since 2014, Serbian producers and importers of food have been obliged to declare allergens from the list of *Codex Alimentarius* on the product packaging. Surveillance of different meat, diary, and cereal product took place in 2016, with aim of checking if the Serbian regulatory requirements for labelling of allergens in food are being fulfilled. Out of 68 different meat products, 20 were not labelled for allergens. Thirty-six labels of various dairy products were examined revealing that allergen information was included on 27 of them. Only one of eight examined cereal products did not have allergen labelling.

1. Introduction

Allergens in foodstuffs are a major risk for the sensitive part of the population. The incidence of food allergy is increasing, according to recent combined studies, in children and in adults [1]. An increase in the incidence of food-related allergies can be associated with an increase in the number of data from different studies, as well as an increase in consumers' awareness of health problems themselves. Nevertheless, probable or clinically confirmed findings led to a severe allergy rate of 3.08% among children in the United States [2]. The prevalence of allergies caused by foods in the European population was calculated for milk, eggs, wheat, soybean, peanut, nuts and shellfish, in turn; 0.2% (0.2-0.3), 0.2% (0.2-0.3), 0.1% (0.01-0.2), 0.3% (0.1-0.4), 0.2% (0.2-0.3), 0.5% (0.08-0.8), 0.1% (0.02-0.2), and 0.1% (0.06-0.3) [3]. This study [3] covers the most common food allergens that are defined by the list contained in the *Codex Alimentarius*, and they are also contained in Serbian regulatory requirements [4]. Avoiding the use of allergens in the diet is the most effective way of preventing food-related allergic reactions. One problem occurs when foods have basic compositions that do not contain allergens, but these can still occur in traces, due to cross-contamination. To avoid the exposure of the vulnerable part of the population to allergens, manufacturers are required to properly declare allergens listed in the Serbian regulatory requirements [4]. Applicable European Union (EU) regulation [5] prescribes the declaration of allergens to ensure the safety of the food chain from packaging, export, distribution, wholesale, retail and catering production, as well as inspectors' responsibilities for the application of these regulations. The EU lists 14 allergens that, in addition to precautionary measures from an existing Good Manufacturing Practice, are required to be included on the product declaration [5]. Previous regulations relate to originally packaged food, while catering, public kitchens, restaurants, and the like can rely on voluntary information (oral or written) on allergens in the meal.

Cereals containing gluten are to be listed on the declaration, with a bold font. Gluten-free labelling is voluntary, but if groceries are voluntarily labelled as gluten-free, the foodstuffs must meet the requirements of the regulations [6,7]. The labelling of crustaceans or shellfish as an allergenic group is mandatory, regardless of the species name: e.g. shrimps (crabs); oysters (shellfish). Similarly, fish products/ingredients are labelled as fish, regardless of the type: e.g. trout (fish). Eggs, regardless of the type of bird from which they originate, are listed on the declaration as an allergen. Soya is listed as

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either soybean, soybean meal or soy/soya, and it is included in parentheses if the product is mentioned: e.g. Tofu (soya). Declaring peanuts as nuts should be avoided, but the name *peanuts* should be specified. In Serbia, dairy products are a special case. According to article 23 [4], ingredients do not need to be listed on butter, cheese, plain unadulterated yoghurt etc., since apart from bacterial cultures and enzymes, they largely consist of milk. For other foods, when there is no specific note that milk components are allergenic ingredients in a food, e.g. lactose, whey and casein, milk must be listed in brackets in the ingredient list e.g. casein (milk). Allergenic nuts from the list are almond, nut, cashew nut, pecan, hazelnut, pistachio nuts, macadamia, Queensland walnuts and their products, and these must be listed by species in the ingredient list. Chestnut and coconut contain the word *nuts*, but are not listed as allergens by *Codex Alimentarius*. Sesame and mustard must be listed in the ingredient list both as raw materials and as a product, e.g. Tahini (sesame). Sulphites in an amount greater than 10 mg/kg (mg/L) are listed as an allergen, but are also included as an ingredient e.g. Sulphur dioxide.

Amendment of older Serbian regulations [7] concerning labelling and declarations of foodstuffs resulted in new Serbian regulatory requirements [4]. The new requirements [4] have common elements mandatory for the declaration of packaged foods: the name under which the food is sold, a list of ingredients, the net quantity, expiry date/use by date or best before date, storage conditions, batch or lot marking, name and head office of the manufacturer (food business operator), which produces/packs the food, instruction for use of the food, the category of food quality, if prescribed, and the content of alcohol in drinks with greater than 1.2% v/v alcohol. In addition to these common requirements, there is now a clearly defined requirement [4] that on the food declaration, ingredients that could cause allergies and/or intolerances are listed.

The aim of this market research was to determine if the Serbian regulatory requirements with respect to allergen labelling of retail foods was being fulfilled.

2. Materials and methods

Allergen declarations were examined using photographs of samples from ″infolab″ database of sample analysis of Institute of Meat Hygiene and Technology. Samples were divided into 3 groups: meat and meat products; dairy products and cereal based products. Each group of samples was classified according to method of giving allergen information on the packaging. Percentage of each labelling style was determined regarding total number of samples in the group.

3. Results and discussion

Allergen declarations for those allergens listed in Serbian regulatory requirements [4] were studied. Labels from 112 meat, milk and cereal products from different manufacturers were examined and the ingredient lists and allergen declarations were studied.

3.1 Meat and meat products

Among retail meat products, 14 kulen (a type of spicy, dry-cured raw meat sausage) declarations, 15 hot-dog declarations, 22 canned meat declarations and 17 declarations for ready-to-eat groceries produced by various domestic and foreign manufacturers were examined (table 1). Two producers of kulen included allergen information (a note) about the possible presence of soy and gluten, neither soy nor gluten were listed in the ingredient list. One kulen producer included the allergen information “without gluten and allergens”, while other manufacturers did not indicate the possibility of the presence of allergens either in the ingredient list or in a special note.

Table 1. Number and percentage of different meat products with various forms of allergen labelling.

Method of giving allergen information on the packaging	Kulen	Hot-dog	Canned meat	Ready-to-eat meal
Allergen information listed in a separate note	2 (14%)	7 (47%)	6 (27%)	1 (6%)
Emphasized font in Ingredient list	/	4 (27%)	16 (73%)	7 (41%)
Other method of labelling allergens	1 (7%)	3 (20%)	5 (23%)	4 (23%)
No labelling of allergens	13 (93%)	2 (13%)	3 (14%)	5 (29%)

Seven out of fifteen local hot-dog manufacturers listed a special note giving allergen information on the presence of soybean allergens (7), gluten (2), milk (1), while the only EU producer mentioned lactose, celery, mustard, soybean, wheat and peanuts in their allergenic information note. Three manufacturers who included a note for allergen information and, in a bold font, also listed the allergens in the ingredient list. Four producers who did not have an allergen info note indicated allergens using bold font in the ingredient list (soy protein and wheat protein). The two manufacturers did not list allergenic substances either in the ingredient list or in a special note. The sixteen producers of pressed hams emphasized allergens in the ingredient list using a bold font, as the only way of labelling allergens . Six declarations, in addition to allergens being in the listed ingredients, also had specific allergen information notes on the presence of soybeans (5) and milk (1). Five manufacturers did not declare allergens as ingredients, but had allergenic information about the possible presence of milk proteins. Three manufacturers did not have any of the regulated allergens either as ingredients or traces. Ready-to-eat meat dishes can contain vegetables, spices and additives. The seven producers labelled the allergenic substances with a bold font in the ingredient lists. Only one producer included a separate note for allergens. Four manufacturers used bold font to highlight allergens in the ingredient list, and had special allergen information in a separate note. The remaining five manufacturers did not list allergens on the product packaging at all.

3.2 Dairy products

Eight cheese declarations from various manufacturers were examined, as well as seven declarations from yogurt and 21 from ice-cream (table 2). Three cheese producers included milk in the ingredient list using a bold font. One manufacturer also stated in a special note that the product contained milk. The remaining five producers did not mention milk on the ingredient label or in a separate note (which is in accordance with Serbian regulation for these types of products).

Table 2. Number and percentage of dairy products with various forms of allergen labelling.

Product	Cheese	Yoghurt	Ice-cream
Allergen information listed in a separate note	1 (12%)	3 (43%)	4 (19%)
Emphasized font in Ingredient list	3 (37%)	6 (75%)	16 (76%)
Other method of labelling allergens	/	/	/
No labelling of allergens	5 (62%)	3 (43%)	1(5%)

Sixteen ice-cream declarations, from different producers, declared allergens by using a bold font in the ingredient list; milk (11), soybean (5), gluten (3), hazelnut, egg (2), peanuts, sesame (1). Gluten was printed in bold font as biscuit, gluten or starch. Four ice-cream declarations did not have information on allergens printed with an accented font, while they did have a special note indicating the product could contain soybeans (3), peanuts (3), and nuts (2). One ice-cream did not include any allergen information on the declaration.

3.3 Cereal products

Eight samples of frozen dough were examined from different manufacturers. Four frozen doughs had ingredient lists with allergenic ingredients emphasised by text font, while two products had a special note citing possible allergens. Three frozen doughs also had an allergen information note, but the allergens were not emphasized by the font used in the ingredient lists. Only one frozen dough did not have either allergen marked with a special font in the ingredient list, nor a special note about the allergen content of the product.

The Serbian regulatory requirement states that allergens must be listed in the ingredients when it cannot be undoubtedly concluded that the raw material(s) used are not allergen(s) [4]. However, it is not necessary to specify allergenic components when the product is made exclusively of one main ingredient, e.g. unadulterated plain yoghurt, which contains milk and bacterial cultures. Therefore, a high percentage of Serbian retail yoghurts and cheeses did not have allergenic milk declared on their labels, since this is not mandatory according to local law. Elsewhere, five percent of chocolate sampled had declared allergens in a special note [8]. Studies on the declaration of food allergens in Europe give special attention to allergy-preventive labelling. Most surveillance studies include labelling and testing for the presence of allergens in preventively-labelled products. When a study of allergy-preventive milk labelling [9] was carried out, milk in amounts greater than 1 mg/serving were detected in products with two different types of preventive declarations: in 60% of the products listing milk as a minor ingredient, and in all the tested foods listing milk fat as a minor ingredient. A study involving the declaration of peanuts as an allergen [10] detected a lower quantity of peanuts in products where it was listed as a possible ingredient (7.3%) than when peanuts was a component to a lesser degree (33%). In a study that included absence of milk, egg and peanut allergen labelling for groceries from large commercial chains, 2.6% of studied groceries had egg allergen that was not declared, while 3% of the groceries contained undeclared milk allergen but none of the examined groceries had undeclared peanut traces [11]. Seventeen percent of products examined contained advisory labelling [12] on the U.S. market, comparing to 23% (table 1) and 22% (table 2) of Serbian retail products.

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