



Food allergens on food product labels: unification of nomenclature

Alérgenos alimentares em rótulos de produtos alimentícios: uma unificação da nomenclatura

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ABSTRACT

The prevalence of food allergies has grown considerably in recent decades. Patient education on label reading and identification of allergens in food products is essential, even after the publication of RDC No. 26/2015, which established the labeling requirements for the main food allergens. A major difficulty is the use of multiple terminologies to name a food ingredient, in addition to the lack of a compilation of these nomenclatures into a single list. In this study, we developed an unified list of the nomenclatures of the 4 main food allergens based on preexisting lists for use in clinical practice and in future projects involving identification of food allergens through artificial intelligence tools.

Keywords: Food hypersensitivity, allergens, food labeling.

Food allergies have shown an increasing prevalence in recent decades. In Brazil, it is estimated that approximately 8% of children up to 2 years old and 2% of adults may have some type of food allergy^{1,2}. Currently, the cornerstone of food allergy management is avoidance of the allergenic food.

In this context, proper reading of nutrition facts labels and the identification of allergenic proteins by patients and caregivers is essential. In 2014, the

RESUMO

A prevalência das alergias alimentares vem crescendo de forma significativa nas últimas décadas. A educação do paciente na leitura de rótulos e identificação dos alérgenos nos produtos alimentícios é fundamental, mesmo após a publicação da RDC nº 26/2015, que estabeleceu os requisitos de rotulagem dos principais alérgenos alimentares. Uma das maiores dificuldades é a utilização de numerosas terminologias diferentes que são utilizadas para nomear um ingrediente alimentício, além de não haver uma compilação destas nomenclaturas em uma única listagem. Neste trabalho, foi realizada uma listagem unificada das nomenclaturas dos quatro principais alérgenos alimentares com base nas listas preexistentes, a fim de uso na prática clínica e em projetos futuros envolvendo identificação dos alérgenos alimentares através de ferramentas de inteligência artificial.

Descritores: Hipersensibilidade alimentar, alérgenos, rotulagem de alimentos.

campaign “Põe no Rótulo” (“Put It on the Label”) was launched to raise public awareness about food allergies and promote actions toward standardizing the labeling of food allergens³. In 2015, the Brazilian Health Regulatory Agency (ANVISA) issued Resolution No. 26/2015, establishing requirements for mandatory labeling of the major allergens implicated in food allergies⁴, providing clearer and more accessible information to the public. However, recent studies

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show that, even after the publication of the ANVISA resolution, many labels still fail to comply, either due to missing allergen declarations or spelling errors. A study conducted in Bahia, Brazil, in 2023⁵ found that 27% of the analyzed food labels did not comply with Resolution No. 26/2015. A study conducted in Minas Gerais, Brazil, in 2022⁶ analyzed product labels and found that 35% were noncompliant, with the majority (91.4%) failing to declare allergens. These studies highlight the ongoing need for consumer education and active engagement in reading nutrition fact labels.

One of the major challenges in this regard is the extensive list of terms used to name food ingredients. The nomenclature may not only refer to the allergenic food itself but also to derivatives or proteins of the allergenic food. Additionally, technical or scientific terms are often used to refer to allergens, making it harder for consumers to understand and identify them.

Several lists have been published on national and international websites and in consensus guidelines, aiming to cover the main nomenclatures for allergenic foods⁷⁻¹⁰. However, a quick search shows that these lists are often incomplete. Tables 1, 2, 3, and 4 present a unified and revised listing of the 4 major food allergens that feature a variety of nomenclatures on product labels (milk, egg, wheat, and soy). Other allergens listed in the ANVISA resolution (such as peanuts, tree nuts, shrimp, and fish) were not included, as their nomenclature tends to be more straightforward on nutrition facts labels, appearing as the name of the food itself rather than under alternative terms.

A more comprehensive list would allow for the standardization of the incomplete lists currently published, with the aim of facilitating their use in clinical practice for educating patients with food allergies. Furthermore, our group has been developing a mobile application powered by artificial intelligence algorithms that can read nutrition facts labels, identify the presence of allergens, and inform the user, to assist in the care of individuals with food allergies¹¹. For the development of this tool, it is crucial to use the most complete list possible to improve the sensitivity of the method in detecting allergens.

Table 1

Nomenclature for cow's milk found on labels

Milk (whole, semi-skimmed, skimmed, powdered, condensed, evaporated)
Anhydrous milk fat
Butter
Butter esters
Butter fat
Butter oil
Buttermilk
Caramelized milk (or <i>dulce de leche</i>)
Casein
Casein hydrolysate
Caseinate (calcium, potassium, ammonium, magnesium, sodium)
Cream
Curds
Dairy blend
Dairy compound
Dairy protein
Delactosed or demineralized whey
Diacetyl
Ghee
Half-and-half
Hydrolyzed milk protein
Hydrolyzed whey protein
Lactalbumin
Lactalbumin hydrolysate
Lactalbumin phosphate
Lactic acid starter culture
Lactic acid starter culture in milk or whey
Lactoferrin
Lactoglobulin
Lactose
Lactulone
Lactulose
Microparticulate whey protein
Milk fat
Milk protein concentrate
Milk protein hydrolysate
Nougat
Petit-suisse
Rennet casein
Sour milk solids
Yogurt
Yogurt hydrolysate

Table 2

Nomenclature for egg found on labels

Egg (chicken, duck, goose, turkey, quail, raw, boiled, fried, poached, omelet)
 Albumin (or albumen)
 Avidin
 Cystatin
 Dried egg whites
 Egg albumin
 Egg solids
 Egg white
 Egg yolk
 Flavoprotein
 Lecithin
 Livetin
 Livoprotein
 Low-density lipoprotein
 Lysozyme
 Ovalbumin
 Ovoglobulin
 Oviglycoprotein
 Ovomacroglobulin
 Ovomucin
 Ovomuroid
 Ovostatin
 Ovotransferrin
 Vitellin

Table 3 (continuation)

Nomenclature for wheat found on labels

Kamut wheat
 Kibbeh (or kibe or kubbeh)
 Matzoh, matzoh meal (or matzo, matzah, matza)
 Seitan (or gluten meat)
 Semolina
 Triticale
 Wheat beer
 Wheat bran
 Wheat flakes
 Wheat flour
 Wheat germ
 Wheat germ oil
 Wheat gluten
 Wheat semolina
 Wheat sprouts
 Wheat starch
 Wheatgrass
 Whey protein isolate
 Whole wheat flour
 Whole wheat grains
 Whole wheat grains

Table 3

Nomenclature for wheat found on labels

Wheat
 Atta (or *chakki atta*)
 Bread crumbs
 Bread pudding
 Buckwheat
 Bulgur (or burghul, spelt)
 Cereal extract
 Cereal flour
 Chlorophyll
 Couscous
 Durum
 Einkorn
 Emmer
 Enriched all-purpose flour
Fu wheat
 Gluten
 Hydrolyzed wheat bran

Table 4

Nomenclature for soy found on labels

Soy
 Beta-amylase
 Conglycin
 Conglycinin
 Edamame
 Fermented soybean paste
 Globulins
 Glycinin
 Hemagglutinin
 Hydrolyzed vegetable protein
 Isoflavone
 Lecithin
 Lipoxigenase
 Miso
Natto
Shoyu
 Soy extract
 Soy protein isolate

Table 4 (continuation)

Nomenclature for soy found on labels

Soy sauce
<i>Sufu</i>
<i>Tamari</i>
<i>Tao-cho</i>
<i>Tao-si</i>
<i>Taotjo</i>
<i>Tempeh</i>
<i>Teriyaki</i>
Textured soy protein
Textured vegetable protein
Tofu
Trypsin inhibitor
Urease
Vegetable broth
Vegetable fat
Vegetable protein
<i>Yuba</i>

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