

Evaluation of Calcium Information for Latin American Vegans in Governmental Entities

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Plant-based diets are a growing trend in Latin America, and it is likely that this trend includes an increased number of vegans. The increasing demand for meat substitutes, vegan products, and restaurants shows how consumers are shifting their preferences towards plant-based diets. For example, in Argentina, where many traditional dishes contain meat, the number of vegetarian and vegan businesses has doubled in five years.¹

According to a 2016 online survey conducted by the global market research firm, Nielsen Company, 4% of the population in Latin America self-identifies as vegan.² This is the best estimate we have of Latin American vegans, but it is important to consider that self-identified online surveys might overestimate the number of vegans and vegetarians.

To include this growing fraction of the population, governmental entities need to start considering vegans in their dietary guidelines. These plant-focused shifts would also contribute to solving the high prevalence of non-communicable diseases in Latin America (such as obesity, diabetes, and cardiovascular diseases), and the pending issue of climate change. I conducted an internet search to find out about the current state of calcium information for vegans in dietary guidelines and government websites from Latin America. American governmental entities were included when their information was geared for Latin Americans. This evaluation focused on calcium information because proper calcium advice for vegans is scarce, despite calcium being a nutrient that can be easily obtained with a vegan diet.

To evaluate government entities, I constructed a rubric that assessed two categories: accessibility and quality of information. The category of accessibility gave entities a maximum of four points and evaluated if nutrition guidelines or calcium information was easy to understand and easy to find on government websites.

The category of quality of information provided entities with a maximum of 22 points and evaluated if calcium recommendations were similar to the Recommended Dietary Allowance (RDA) from the Institute of Medicine, the calcium recommendations used in the United States. Recommendations that differed only by 200 mg from the RDA were still considered similar.

This category also evaluated if government entities mentioned both vegans and vegetarians at least once in their documents or websites; if they specifically addressed vegans and vegetarians in their calcium recommendations; and if they included good vegan calcium sources for everybody. Lastly, government entities scored more points if the information contained recommendations about oxalates (a substance that impedes calcium absorption), sources with their calcium absorption percentages, and other factors that interfered with bone health other than calcium intake. Governmental entities could score two points more if they gave proper advice about calcium supplementation. The maximum possible score of this rubric was 26 points.

Thirty-six government entities with available nutritional guidelines and recommendations were assessed. Documents were published between 2005 and 2020, except for a 1997 document from Costa Rica that included vegan sources of calcium.

Some of these documents are designed for health workers, politicians, or people whose job includes promoting healthy eating habits, even if they are not nutritionists. Other documents are intended for

regular consumers and might be specific for kids, adolescents, elderly people, and in pregnancy or for those who are HIV positive.

Thirteen of the sites (35%), depending on their target population, contain recommendations that are the same or very similar to the U.S. RDAs of the Institute of Medicine (IOM). Some cited the IOM. The National Institutes of Health and USDA ChooseMyPlate are the only government entities with calcium recommendations for vegetarians and vegans, either directly on their webpage or through links. Other entities mention vegans, but only in vitamin B12 recommendations and do not have specific calcium recommendations for them.

The tendency, especially in Latin American governmental entities, is to prioritize dairy as a calcium source. One of the issues of *The Consumer's Magazine* (2016), a Mexican government publication, is focused on discouraging use of plant milks with the argument that these are less nutritious than dairy products since they contain less calcium, protein, and more sugar and carbohydrates.³ This magazine aims at informing consumers about products that might have fewer benefits than the ones stated in their advertisements. While it is true that some brands of plant milk might contain less calcium and are high in sugar, we can also find plant milks fortified with calcium, with no sugar added, and with a good protein content.

The good news is that twenty-two (60%) of the documents and websites recommend vegan calcium sources for everybody. However, eleven of these include at least one source of calcium that is not easily absorbed. Examples of these sources are spinach, Swiss chard, almonds,⁴ watercress,⁵ sesame seeds,⁶ amaranth,⁷ sweet potato,⁸ black nightshade or *hierba mora* in Spanish (an edible weed used mostly in El Salvador and scientifically called *Solanum nigrum*),⁹ *chipilín* (*Crotalaria longirostrata*),⁹ and *chaya* (*Cnidioscolus aconitifolius*).⁹ The website of the Ministry of Public Health from Tucumán, Argentina, has a table with nineteen vegan calcium sources but includes six high oxalate foods among those.

Few sites (16%) mention oxalates directly or indirectly. Indirectly means they do not indicate what oxalates are, but state that plant foods might contain calcium that is less easily absorbed. Almost all these statements miss explaining that some vegan calcium sources have calcium that is better absorbed than dairy! One document contains a false claim stating that 100% of calcium from dairy is absorbed when approximately 30% is absorbed.¹⁰

Only the U.S. National Institutes of Health specifies which foods are high in oxalates in their English section and warn the reader about considering these sources to satisfy calcium needs. The Spanish section only explains what oxalates are but does not specify which foods are high in oxalates.

Governmental entities with the best scores are the U.S. National Institutes of Health, Medline Plus (part of the National Institutes of Health), the Ministry of Public Health from Tucumán, USDA Choose My Plate, and the website of the U.S. Dietary Guidelines 2015-2020. In the following table, you can find more details about governmental entities with the best scores. For now, there is still a lot of work to do for governmental entities to include detailed calcium information for vegans and vegetarians. Continuing with the promotion of veganism and asking for official vegan dietary guidelines is essential.

Governmental Entities with Vegan Calcium Sources for Latin American Vegans

Governmental Entity	Comments and Links
National Institutes of Health	This governmental entity includes complete calcium information for

<p>Score: 21.5</p> <p>Country: U.S.</p> <p>Year: 2018, 2019, 2020</p> <p>Language: English and Spanish</p>	<p>vegans and vegetarians, including advice about supplements. Definitely, one of the best governmental entities for vegans and vegetarians!</p> <p>Links: https://ods.od.nih.gov/factsheets/Calcium-HealthProfessional/ https://ods.od.nih.gov/factsheets/Calcium-Consumer/ https://ods.od.nih.gov/pdf/factsheets/Calcium-DatosEnEspanol.pdf https://www.bones.nih.gov/health-info/bone/espanol/salud-hueso</p>
<p>Medline Plus</p> <p>Score: 15</p> <p>Country: U.S.</p> <p>Year: 2020</p> <p>Language: English and Spanish</p>	<p>Medline Plus includes green leafy vegetables, tofu, kale and calcium-enriched foods such as breakfast cereals, fruit juices, and plant milks. Calcium information is mainly geared for the elderly, and includes a link to the National Osteoporosis Foundation (mentioned in the VRG article about Best Websites in English with Information on Calcium in the Vegan Diet for Latin Americans).</p> <p>Links: https://medlineplus.gov/spanish/calcium.html https://medlineplus.gov/calcium.html https://medlineplus.gov/ency/article/002062.htm</p>
<p>Ministry of Public Health of Tucumán, Argentina.</p> <p>Score: 13.5</p> <p>Country: Argentina</p> <p>Year: 2016</p> <p>Language: Spanish</p>	<p>This document is geared for health professionals. It cites the RDA from the IOM (Institute of Medicine, from the United States). Calcium information considers vitamin D, exercise, smoking, and excess of caffeine and alcohol as other important factors that affect bone health. Protein is also recommended for healthy bones. It states 2000 mg as a safe limit for calcium consumption. Vegans and vegetarians are mainly considered in the B12 section, which has updated and accurate information.</p> <p>Link: http://msptucuman.gov.ar/guias-alimentarias-para-la-poblacion-argentina/#:~:text=Las%20%E2%80%9CGu%C3%ADas%20Alimentarias%20para%20la,de%20usuarios%20directos%20e%20indirectos</p>
<p>USDA ChooseMyPlate</p> <p>Score: 12</p> <p>Country: U.S.</p> <p>Year: 2011, 2014</p> <p>Language: English and Spanish</p>	<p>This entity mentions calcium-fortified soymilks, tofu made with calcium sulfate, collards, turnips, mustard greens, bok choy, calcium-fortified breakfast cereals, and orange juice as good vegan calcium sources. The link to USDA National Agriculture Library's Vegetarian Nutrition page is especially helpful for vegetarians and vegans, as well as other links tailored for them.</p> <p>Links: https://www.choosemyplate.gov/ten-tips-healthy-eating-for-vegetarians https://www.choosemyplate.gov/node/5635 https://choosemyplate-prod.azureedge.net/sites/default/files/misc/MyPlateForMyFamily-ParticipantHandouts_Spanish.pdf https://www.choosemyplate.gov/eathealthy/protein-foods/protein-foods-nutrients-health</p>

<p>Dietary Guidelines 2015-2020</p> <p>Score: 11.5</p> <p>Country: U.S.</p> <p>Year: 2014</p> <p>Language: English</p>	<p>Information for vegetarians and vegans is found in very small sections. Vegan calcium sources such as fortified cereals, plant milks, orange juice, and tofu are mentioned for the general population.</p> <p>Link: https://health.gov/our-work/food-nutrition/2015-2020-dietary-guidelines/guidelines/appendix-11/</p>
<p>Infomed - National Center of Medical Sciences Information, Ministry of Public Health</p> <p>Score: 10</p> <p>Country: Cuba</p> <p>Year: 2008</p> <p>Language: Spanish</p>	<p>This entity recommends good vegan sources such as cabbage, broccoli, and calcium-fortified products. Vitamin D, vitamin C, and vitamin K are mentioned as other nutrients important for bone health. It mentions vegans in B12 recommendations.</p> <p>Link: http://www.sld.cu/galerias/pdf/sitios/ginecobs/recomnutric2008a.pdf</p>
<p>Health Institute of the State of Mexico</p> <p>Score: 9.5</p> <p>Country: Mexico</p> <p>Year: 2007, 2008, 2018</p> <p>Language: Spanish</p>	<p>It is interesting to notice that the summary recommendations mention some good vegan calcium sources such as corn tortillas, and green leafy vegetables before mentioning dairy products. They do not have recommendations for vegetarians or vegans but inform readers about many other factors that might interfere with bone health (vitamin D, exercise, alcohol, smoking, excess of caffeine).</p> <p>Links: https://salud.edomex.gob.mx/isem/pr_rs_alimentacion_saludable https://salud.edomex.gob.mx/isem/pr_rs_osteoporosis https://salud.edomex.gob.mx/isem/documentos/prevencion/recomendaciones/guiaorientacionalim.pdf https://salud.edomex.gob.mx/isem/documentos/prevencion/recomendaciones/manual_alimentacion.pdf https://salud.edomex.gob.mx/isem/documentos/prevencion/recomendaciones/5_micronutrimientos.pdf</p>
<p>Ministry of Health of Costa Rica</p> <p>Score: 9.5</p> <p>Country: Costa Rica</p> <p>Year: 1997</p> <p>Language: Spanish</p>	<p>Good vegan calcium sources mentioned for the general population are beans, broccoli, radish leaves,¹¹ mustard greens, and chayote. At that time (1997), beans, together with dairy products, were considered the main source of calcium consumed. 800 mg of calcium are recommended for adults. Despite mentioning vegan sources first, they state a preference for dairy products.</p> <p>Link: https://www.ministeriodesalud.go.cr/gestores_en_salud/guiasalimentarias/guias%20alimentarias.pdf</p>

<p>Colombian Institute of Family Welfare</p> <p>Score: 9</p> <p>Country: Colombia</p> <p>Year: 2015, 2020</p> <p>Language: Spanish</p>	<p>They introduce vegan calcium sources with the statement that these contain calcium that is less easily absorbed, despite broccoli having a higher absorption rate than milk. They mention other good vegan calcium sources such as cabbage, soy, beans, lentils, chickpeas, green peas, and green leafy vegetables (even if they do not specify which ones). They mention that protein, vitamin K, and vitamin D are beneficial for bone health. The pdf document is intended for teachers and workers in charge of stressing the importance of eating healthy.</p> <p>Links: https://www.icbf.gov.co/mis-manos-te-ensenan/el-ingrediente-clave-para-tener-huesos-fuertes-y-musculos-flexibles https://www.icbf.gov.co/sites/default/files/manual_facilitadores_gaba.pdf</p>
<p>Food and Nutrition Commission of Puerto Rico</p> <p>Score: 9</p> <p>Country: Puerto Rico</p> <p>Year: 2012</p> <p>Language: Spanish</p>	<p>This is one of the few Latin American government entities that mention calcium-fortified plant milks. They state that a cup of calcium-fortified soymilk offers 200 mg of calcium, compared to 300 mg in a cup of milk. Also, other calcium-fortified plant milks and orange juice are recommended. Non-fortified plant milks are discouraged. These recommendations were updated based on the Dietary Guidelines for Americans (2010) and ChooseMyPlate (2011), documents both used in the United States. This entity considers vegans and vegetarians in the B12 section and when mentioning that meat can be substituted for legumes and cereals.</p> <p>Links: http://www.salud.gov.pr/Dept-de-Salud/Documents/Comision%20de%20Alimentacion%20y%20Nutricion%20de%20Puerto%20Rico/GuiaAlimentaria.pdf http://www.salud.gov.pr/Dept-de-Salud/Documents/Comision%20de%20Alimentacion%20y%20Nutricion%20de%20Puerto%20Rico/Guia%20Alimentaria.pdf#search=guia%20alimentaria</p>
<p>Ministry of Public Health and Social Assistance</p> <p>Score: 9</p> <p>Country: Guatemala</p> <p>Year: 2012</p> <p>Language: Spanish</p>	<p>Vegan calcium sources mentioned are legumes, nuts, green leafy vegetables, and nixtamalized corn tortillas. In addition, the document includes <i>Incaparina</i> as a source of protein and calcium. This plant milk was created in Guatemala by mixing corn and soy flour, aiming to be a cheap and healthy food with good protein content.</p> <p>Link: https://www1.paho.org/gut/dmdocuments/guias-alimentarias-corregida.pdf</p>
<p>Office of the First Lady</p>	<p>This document states the basic knowledge about calcium and other</p>

<p>Score: 8.5</p> <p>Country: Dominican Republic</p> <p>Year: 2009</p> <p>Language: Spanish</p>	<p>nutrients that the population should acquire. Besides mentioning dairy and eggs as calcium sources, it includes good vegan sources such as beans, chickpeas, green leafy vegetables, and calcium-fortified oats. Sesame seeds are also included, but these are high in oxalates. The RDAs from the IOM are also used as a reference in this document.</p> <p>Link: http://www.fao.org/3/a-as866s.pdf</p>
<p>Food Guide National Commission for Honduras</p> <p>Score: 7.5</p> <p>Country: Honduras</p> <p>Year: 2013</p> <p>Language: Spanish</p>	<p>After mentioning animal foods high in calcium, this document includes soybeans, sesame, and roasted cashew seeds, green leafy vegetables, and nixtamalized corn <i>tortillas</i>. From these vegan sources, sesame and cashew seeds are high in oxalates.</p> <p>Link: http://www.bvs.hn/Honduras/pdf/GUIASALIMENTARIAS.pdf</p>
<p>Ministry of Health</p> <p>Score: 7</p> <p>Country: Bolivia</p> <p>Year: 2014</p> <p>Language: Spanish</p>	<p>The first link contains Dietary Guidelines for the general population, while the second one is geared towards the elderly. Both documents mainly recommend dairy as a calcium source; however, they also include vegan calcium sources in a section that compiles traditional indigenous foods. High oxalate calcium sources mentioned in this section are amaranth, sesame seeds, and sweet potato. Good vegan calcium sources with known low oxalate content are quinoa, <i>cañahua</i> (a cereal very similar to quinoa), oats, lupin beans, pumpkin, and figs.</p> <p>Links: https://www.minsalud.gob.bo/images/Libros/DGPS/PDS/p342_bt_dgps_uan_BASES_TECNICAS_DE_LAS_GUIAS.pdf https://minsalud.gob.bo/images/Libros/DGPS/PDS/p346_g_dgps_uan_GUIA_ALIMENTARIA_PARA_EL_ADULTO_MAYOR_1.pdf</p>

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