Nutrición Hospitalaria

Nutr Hosp. 2015;31(1):488-493
ISSN 0212-1611 • CODEN NUHOEQ
S.V.R. 318

Original/*Otros*

The presence and accuracy of food and nutrition terms in the Spanish and English editions of Wikipedia: in comparison with the Mini Larousse encyclopaedia

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Abstract

Objectives: To determine the presence and appropriateness of the terminology concerning Food/Nutrition Science in the Spanish and English editions of Wikipedia and to compare them with that of an encyclopaedia for general use (Mini Larousse).

Méthods: The terms in the study were taken from the LID dictionary on metabolism and nutrition: The existence and appropriateness of the selected terms were checked through random sample estimate with no replacement (n=386), using the Spanish and English editions of Wikipedia.

Results: The existence of 261 terms in the Spanish edition and 306 in the English edition was determined from the study sample (n=386). Several differences were found between the two editions (p<0,001). There were differences between the two editions in relation to the appropriateness of definitions, though these were not studied in any depth (p<0,001). During the study of the 261 terms in the Spanish version of Wikipedia,3 entries (1,15%, IC95%: 0,00-2.44) were found to be lacking in appropriate information; 2 of the 306 entries in the English edition failed to give appropriate information (0,52%, IC95%: 0,00-1,23). A comparison between the existing entries of the Mini Larousse Encyclopaedia and the Spanish edition of Wikipedia, showed Wikipedia (p<0,001) as having a larger number of entries.

Conclusions: The terminology under study is present to a lesser extent in the Spanish edition of Wikipedia than in the English edition. The appropriateness of content was greater in the English edition. Both the Spanish and

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Recibido: 2-X-2014.
Aceptado: 2-XI-2014.

PRESENCIA Y ADECUACIÓN DE LOS TÉRMINOS SOBRE ALIMENTACIÓN Y NUTRICIÓN EN LAS EDICIONES ESPAÑOLA E INGLESA DE LA WIKIPEDIA: COMPARACIÓN CON LA ENCICLOPEDIA MINI LAROUSSE

Resumen

Objetivos: Determinar la presencia y adecuación de la terminología sobre las ciencias de la alimentación/nutrición en las ediciones española e inglesa de la Wikipedia, comparándola con una enciclopedia de ámbito general (Mini Larousse).

Métodos: Los términos a estudio se obtuvieron del Diccionario LID sobre metabolismo y nutrición. Se comprobó la existencia y adecuación de los términos seleccionados a partir del cálculo muestral aleatorio sin reposición (n = 386), accediendo a las ediciones española e inglesa de la Wikipedia.

Resultados: De la muestra a estudio (n=386) se determinó la existencia de 261 términos en la edición española y 306 en la inglesa. Existiendo diferencias entre las dos ediciones (p<0,001). Existieron diferencias, relacionadas con la adecuación de las definiciones, estudiadas de una forma no exhaustiva, entre ambas ediciones (p<0,001). Cuando se estudiaron los 261 términos en la edición en español de Wikipedia, se encontró que 3 entradas (1,15%, IC95%: 0,00-2.44) no tenían información apropiada; 2 de las 306 entradas de la edición de Inglés no presentaron información apropiada (0,52%, IC95%: 0,00-1,23). Al comparar las entradas existentes entre la Enciclopedia Mini Larousse y la edición española de Wikipedia, se observó un mayor número en la Wikipedia (p<0,001).

Conclusiones: La terminología a estudio está menos presente en la edición española de la Wikipedia que en la edición inglesa. La adecuación de los contenidos fue mayor en la edición inglesa. La edición española, y por

English editions have a greater number of entries and more exact ones than the Mini Larousse.

(*Nutr Hosp*. 2015;31:488-493)

DOI:10.3305/nh.2015.31.1.8179

Key words: *Access to information. Information dissemination. Information Management. Communication. Nutritional Sciences.*

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(*Nutr Hosp*. 2015;31:488-493)

DOI:10.3305/nh.2015.31.1.8179

Palabras clave: *Acceso a la información. Diseminación de información. Gestión de la información. Comunicación. Ciencias Nutricionales.*

Introduction

The Web 2.0 has proven its part in the knowledge and society of today, and continues to contribute with an increasing number of enhancing initiatives.

One important example is the wiki approach, which has proven to be remarkably successful. It is one of the wiki proposals which has greatly benefited Wikipedia, the online encyclopaedia that anyone can consult. It is one of the most visited websites[1] and usually appears in the top results of the various search engines[2]. Therefore, it could be said that it is a valuable tool for the dissemination and promotion of the health sciences[3].

However, one important criticism has to be concerning the editing process, because there is a high risk of inaccuracy. A reader cannot be absolutely sure that the information is not misleading or incomplete[4-6]. However, for the convenience of readers, Wikipedia score their best quality entries, indicating whether they are good or outstanding. This label is given by consensus after a review of the style, integrity, accuracy and neutrality[7] of each entry. Athough it should be borne in mind that this is ultimately self-assessment.

Some authors compare the organized nature of traditional encyclopaedias with the disjointed and somewhat anarchic growth that Wikipedia shows[8]. Moreover, the main difference between a traditional encyclopaedia and Wikipedia is the collaborative nature of the project itself. It should be noted that the traditional paper encyclopaedia has only readers while Wikipedia has readers who can also be editors.

Also the main advantage of Wikipedia is that it can be updated easily and quickly. One notable example of this was how articles related to pandemic flu H1N1[9] were renewed almost instantly in 2009.

Thus, given the importance of Wikipedia in researching health issues, it is important to be familiar with the quality and relevance of the information available. It must also be determined whether or not students can replace encyclopaedias in paper format with Wikipedia.

The aim of this study was to determine the presence and appropriateness of Food/Nutrition Science terminology in the Spanish and English editions of Wikipedia and to compare them with a general encyclopaedia (Mini Larousse) while bearing in mind, among other variables, suitability, updating, number of consultations and existing references and viewing the existence of association between variables.

Methods

Cross sectional study. The specialised terminology was taken from the LID Dictionary of Metabolism and Nutrition[10], as the standard of comparison. The general encyclopaedia used was the Mini Larousse Encyclopaedia (2011 edition, latest version available at the time of the study). The Mini Larousse was decided upon because until the present day it has been a general encyclopaedia widely used and consulted within the Spanish education system.

We calculated the number of terms to study by using simple random sampling without replacement, making the estimation of population parameters (expected value of about 0.5, precision of interval 0.05 and confidence level = 0.95) in an infinite population, by using the software EPIDAT 3.1. The sample to study was calculated from the 3000 existing terms in the LID Dictionary; namely 386.

The existence of the terms to be studied was checked through Internet access to the Spanish and English editions of Wikipedia: [http://www.wikipedia.org/]. End of consultation: July/1/2013. SPSS software for Windows, version 15, was used for data storage and further analysis.

Variables studied:

- Presence: existence of the term.
- Adequacy: correction of the information was carried out through non-exhaustive checking of both the information and the definitions included in all the terminology by at least two of the authors of this article.
- Update date: last modification of the entry text.
- Queries: number of times per day the term has been consulted.
- Number of references: number of references that support the content of the article (from the entry).
- Number of links: external connections that verify the contents of the article.
- Number of monitors: people who monitor any change made in the article. Wikipedia only reports on entries that are monitored by more than 30 users, so this variable was studied as a dichotomy (under 30 or over 30 monitors)
- Outstanding entry: an entry that the Wikipedia community consider to be of excellent quality after reviewing style, integrity, accuracy and neutrality.

- Good entry: an entry classified as good quality, after reviewing style; and also verified as accurate in facts and verifiable information.

Qualitative variables were described by their frequency and percentage. Quantitative variables as their Average and Standard deviation. Median was used as a measure of central tendency. We also calculated the Maximum and Minimum. The student t test was used to test the significance of average differences in independent samples. The existence of association between qualitative variables, to ascertain the statistically significant differences, was analysed by Pearson's chi-square test. The level of significance was $\alpha = 0.05$.

Results

From the 386 entries studied, 261 terms (67.62%, CI 95%: 62.95 to 72.28) were found in the Spanish edition and 306 terms (79.27%, CI 95%:75.23 to 83.32) in the English edition: the relationship between both was 1:1.17. There are some differences between the two editions (chi-square = 187.37, df = 1, p <0.001), see table I.

When we studied the appropriateness of the 261 terms in the Spanish edition of Wikipedia, it was found that 3 entries (1.15%, 95% CI 0.00 to 2.44) had no appropriate information. Two of the 306 entries found in the English edition did not show adequate information (0.52%, 95% CI 0.00 to 1.23). Several differences in appropriateness were observed between the two editions (chi-square = 41.66, df = 1, p <0.001).

By studying the classification given by the Spanish edition of Wikipedia to the articles under evaluation, it was found that 5 terms were listed as outstanding (1.92%, 95% CI 0.25 to 3.58) and 2 were classified as good (0.77%, 95% CI 0.00 to 1.82). In the English edition, 9 terms were considered outstanding (2.94%, 95% CI 1.05 to 4.83) and 12 as good (3.92%, 95% CI 1.75 to 6.10).

The data on updating information on terms is shown in table II. No differences were found between the two editions of Wikipedia (Student t = 1.14, df = 563, p = 0.256).

The data taken from both the Spanish and English editions concerning the number of references and links that support the quality of information on food / nutrition can be found in table III. Differences were found between the two editions in the number of references given (Student t = -7.19, df = 460.17, P <0.001). This was also found when the average difference between the number of external links containing food / nutrition terminology in both editions were analysed (Student t = -4.79, df = 559.69, P <0.001).

As far as monitoring articles in the Spanish edition is concerned, 17 terms (6.51%, 95% CI 3.52 to 9.51) had more than 30 monitors, while in the English edition there were 171 (55.88%, 95% CI 50.32 to 61.45). There were significant differences between the two Wikipedia editions concerning the number of monitors per entry (chi-square = 9.70, df = 1, p = 0.002), see figure 1.

The number of visits per day for each of the terms on food / nutrition in both editions of the Wikipedia is shown in table IV. There were seen to be several differences in statistics between the two editions (Student t = -5.75, df = 488.10, P <0.001).

Of the 386 food/nutrition terms studied ,125 were found to exist in the Larousse Mini Encylopaedia

Table I
Presence of terminology on food / nutrition in Spanish and English editions of Wikipedia

		Wiki – English edition		
		No	*Yes*	*Total*
Wiki – Spanish edition	No	77	48	125
	Yes	3	258	261
	Total	80	306	386

Table II
Update / obsolescence of the information contained in each of the terms on food / nutrition in Spanish and English editions of Wikipedia (data expressed in days)

	Spanish edition	*English edition*
Maximum	846	2940
Minimum	1	1
Average	67,31 ± 6,34	52,80 ± 10,50
Median	31	21
Mode	10	9

Table III
Statistics on the references and external links containing terminology about food / nutrition in Spanish and English editions of Wikipedia.

		Spanish edition	*English edition*
References	Maximum	185	292
	Minimum	0	0
	Average	7,63 ± 1,34	27,81 ± 2,47
	Median	1	12
	Mode	0	0
External Links	Maximum	21	29
	Minimum	0	0
	Average	1,64 ± 0,18	2,93 ± 0,21
	Median	1	2
	Mode	0	0

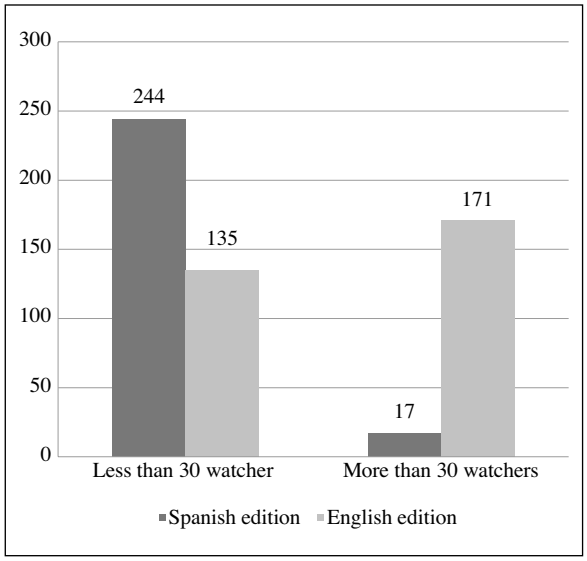

Fig. 1.—Number of monitors of the entries (articles)about food/ nutrition on Wikipedia.

(32,38%, IC del 95%: 27,72 a 37,05). Differences were confirmed concerning the presence of terms in this Encyclopaedia and in the Spanish edition of Wikipedia (chi-square = 49.97, df = 1, p <0.001), and consequently in the English edition. It was verified that 10 terms (8%, 95% CI 3.24 to 12.76) in the Mini Larousse Encyclopaedia could be considered more appropriate than those found in the Spanish edition of Wikipedia: see figure 2.

Discussion

The results obtained suggest that the terminology on food / nutrition science is starting to have an adequate presence in the Spanish edition of Wikipedia and following on from this, in the English edition too. Two studies[11,12] based on the English edition proved the presence of appropriate terms on gastrointestinal diseases as used by the Pathology Association. In contrast, a study of the pharmacological terminology in the Spanish edition was found to be lacking compared to the English edition[13].

Table IV
Queries of terms on food / nutrition in Spanish and English editions of Wikipedia [data expressed in days].

	Spanish edition	*English edition*
Maximum	6335	12823
Minimum	2	1
Average	67,31 ± 6,34	52,80 ± 10,50
Median	261	662
Mode	2	5089

The content may be considered to be adequate, in line with that of other areas of the health sciences. There were few errors found in a study on cancer terminology[14]. In another on surgical procedures, the terminology was seen to be precise[15]. In the case of the terminology used by the Pathology Association, the information was considered to be complete, up to date and of good quality[12]. Another study on health in the English edition was shown to be suitable for use by students of nursing[16]. And in the case of depression and schizophrenia, it was proved that the information available was generally better than that provided by other websites or by even the Encyclopaedia Britannica[17].

In contrast, previous research into pharmacological ingredients presented in the English edition showed important data on dosage and side effects to be missing in several instances. This incomplete information can cause serious harm to patients who may consult it[6]. This was also the case in a study on Methotrexate[18] and in another study on 20 commonly prescribed drugs, information on dosage and side effects was found to be incomplete and inaccurate[19].

A very small number of entries listed as good or outstanding in both editions of Wikipedia were totally unfounded in scientific literature. This may be due to the still low levels of participation in Wikipedia of health-related professionals. This contradicts the fact that American doctors admit to using Wikipedia as a source of information[13], as do pharmacists[7]. They also recognise the fact that they use it more and more, even for teaching[20]. For all those questioned it is the most widely used Web application apart from Google. It should be said however, that several years ago several scientists decided to help in the editing and updating of Wikipedia entries, but most have no desire to join the editorial board[4].

This updating of data proves how easily Wiki technology can be developed and kept up to date[21]. An

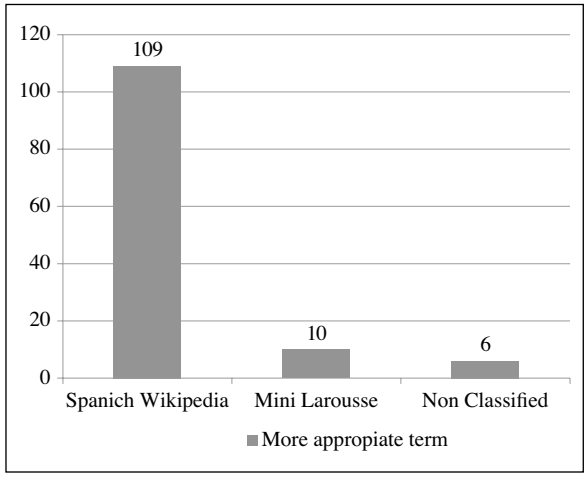

Fig. 2.—Comparison of the adequacy of the 125 terms found in the Larousse Encyclopedia on food/nutritionand ten Spanish edition of Wikipedia.

example of this was the almost immediate revising of Wikipedia articles on the pandemic flu in 2009[9]. In a study on cancer terminology[14] it was found that the entries on the most common cancers were more frequently updated than others and that they were of a higher quality than those on rare cancers. It is evident that the most popular entries are continually monitored[15]. The study on surgical procedures found a positive correlation between the frequency with which the article had been updated and its adequacy.

The increasing appearance of quotes from scientific journals on Wikipedia that lend to the quality of information is due principally to the work of the "librarians" (licensed users who carry out maintenance). There is, however, a slight tendency to quote articles published in high impact journals[22]. Also current trends imposed by accreditation bodies[23] are followed. The higher number of references found in the English edition of Wikipedia was also verified in a previous study, which stated that they are adequate in number and of sufficient quality[14,16]. The study on gastrointestinal diseases showed that the contents were based on at least one scientific article[11]. In the study on nursing terminology it was concluded that references found in the Wikipedia entries were adequate in number and of sufficient quality[16].

Regarding external links, it must be remembered that Wikipedia is not a Web directory, although including a number of external links in its entries provides a valuable service as it enables readers to consult other information on the Internet that may support the content posted.

The differences observed between the two editions regarding monitoring entries could be due to the fact that on a given day, (e.g. October 7, 2012), the Spanish edition had registered 2,380,292 users, of whom them less than 0.7% were active users (users who had accessed the site at least once in the last 30 days). Basically, just over 1,000 people control the Spanish edition of this digital encyclopaedia. However, registered users of the English edition were 10 times more than those of the Spanish edition[24].

The high number of queries that Wikipedia receives is due to it having became the first stop for people seeking information- scientific or otherwise. It is also used to obtain an overview of a specialised area[25]. It is a well known fact that the Internet is seen as an important source of information on health-related topics[26], even in the search of information following the outbreak of a public health emergency[9] or in a specific need, such as ongoing illness or episodic drug therapy[27].

Results indicate that the presence of the terms studied was larger in the Spanish edition of Wikipedia than in the Mini-Larousse. And analysis of the content shows that few terms of the Mini-Larousse could be defined as acceptable. In other words, in the Spanish Wikipedia (and also, of course, in the English edition) a higher number of entries were identified and these were seen to be more appropriate. However, this is not the first time that Wikipedia has been favourably compared with a reputable encyclopaedia of widespread use. In 2005, the prestigious journal Nature published a comparison between the English edition of Wikipedia and the Encyclopaedia Britannica. In this study, they asked independent experts to evaluate different entries, concluding that no significant differences were found between the two encyclopaedias[28,29].

A possible limitation of this study could be that in a random selection of the terminology of food / nutrition, there will be rare or not particularly common terms included. In any case this study offers a general review of the terminology of food / nutrition. The full validity of the content of the website in question is beyond the scope of this study. This would have to be evaluated by specialists in the different fields of food / nutrition: food safety, food technology, basic nutrition, community nutrition, clinical nutrition, etc. A more exact study would need to take into account the essential principles of verifiability and attribution.

Issues concerning writing style have still not been fully resolved, as it is probably too much to expect that an encyclopaedia created by "a thousand hands", can be well written. Although it must be said that some entries are written with sobriety, clarity and elegance.

The degree to which the two editions of Wikipedia are formally correct (grammatical style, syntactic correctness and digital appropriateness) was not taken into consideration in this study. Evaluation is called for to evaluate quality according to traditional criteria (writing, intelligibility, punctuation, etc.) and also to appreciate the digital criteria (appreciation of technical possibilities: hyperlinks, sounds, audio, etc.). This is because Wikipedia must be valid as an encyclopaedia, but it also has to act as a tool of Web 2.0.

Other possible limitations would include: Constant modification does not guarantee content appropriateness; it only guarantees Wikipedia rapid updating, which until now has been unprecedented in the encyclopaedia world. The quality of references and links of every term was not studied, though it may be assumed that the provision of references to scientific publications is possibly connected to improved quality of information.

From the above, the following conclusions can made: Food and nutrition science terminology has an increasing presence in the Spanish edition of Wikipedia. It is to be noted that terminology under examination has a smaller presence in the Spanish edition of Wikipedia than in the English edition. The adequacy of the contents of the articles studied can be considered appropriate. However, there are still significant differences between the two editions regarding suitability of terminology. The level of efficiency in the updating of the entries is remarkable and difficult to find in other forms of publication. It is clear that there are significant differences in relation to the number of

monitors per entry, with the English edition coming out in favour. The high number of queries on Wikipedia, along with its easy access and the speed of content updating, give both editions enormous potential as tools for the transmission of knowledge on food and nutrition sciences. The Spanish and English editions of Wikipedia have more entries and are more appropriate than the Mini Larousse encyclopaedia.

References

1. Alexa, the Web Information Company [Web site]. U.S.A.: Amazon.com Company [consult 23 Oct 2013]. Top Sites (The top 500 sites on the Web) [around 5 screens]. Available at: http://www.alexa.com/topsites
2. Laurent MR, Vickers TJ. Seeking health information online: does Wikipedia matter? *J Am Med Inform Assoc*. 2009;16(4):471-9. doi: 10.1197/jamia.M3059
3. Heilman JM, Kemmann E, Bonert M, Chatterjee A, Ragar B, Beards GM, et al. Wikipedia: a key tool for global public health promotion. *J Med Internet Res*. 2011;13(1):e14. doi: 10.2196/jmir.1589
4. Giles J. Wikipedia rival calls in the experts. *Nature*. 2006;443(7111):493. doi:10.1038/443493a
5. Rosenzweig R. Can history be open source? Wikipedia and the future of the past. *J Am Hist*. 2006;93(1):117–146. doi: 10.2307/4486063
6. Kupferberg N, Protus BM. Accuracy and completeness of drug information in Wikipedia: an assessment. *J Med Libr Assoc*. 2011;99(4):310-3. doi: 10.3163/1536-5050.99.4.010
7. Sanz-Valero J, Wanden-Berghe C, Culebras Fernández JM, Gil A, Ruiz MD, Luengo LM, et al; Grupo de Comunicación y Documentación Científica en Nutrición (CDC-Nut SENPE). Wikipedia y Wikinutrición; herramientas clave para la promoción global de la nutrición. *Nutr Hosp*. 2012;27(5):1375-9. doi:10.3305/nh.2012.27.5.5984
8. Gourdain P, O'Kelly F, Roman-Amat B, Soulas D, Hülshoff TD. La revolución Wikipedia. Madrid, Spain: Alianza Editorial: 2008.
9. Tausczik Y, Faasse K, Pennebaker JW, Petrie KJ. Public anxiety and information seeking following the H1N1 outbreak: blogs, newspaper articles, and Wikipedia visits. *Health Commun*. 2012;27(2):179-85. doi: 10.1080/10410236.2011.571759
10. García de Lorenzo A, director. Diccionario LID Metabolismo y Nutrición. Madrid, Spain: LID Editorial Empresarial, S.L.; 2007.
11. Czarnecka-Kujawa K, Abdalian R, Grover SC. The quality of Open Access and Open Source Internet material in gastroenterology: is Wikipedia appropriate for knowledge transfer to patients? *Gastroenterology.* 2008;134(Suppl 1):A-325-6. doi: 10.1016/S0016-5085(08)61518-8
12. Kim JY, Gudewicz TM, Dighe AS, Gilbertson JR. The pathology informatics curriculum wiki: harnessing the power of user-generated content. *J Pathol Inform*. 2010;1:e10. doi: 10.4103/2153-3539.65428
13. López Marcos P, Sanz-Valero J. Presencia y adecuación de los principios activos farmacológicos en la edición española de la Wikipedia. *Aten Primaria*. 2013;45(2):101-6. doi: 10.1016/j.aprim.2012.09.012
14. Rajagopalan MS, Khanna VK, Leiter Y, Stott M, Showalter TN, Dicker AP, et al. Patient-oriented cancer information on the internet: a comparison of wikipedia and a professionally maintained database. *J Oncol Pract*. 2011;7(5):319-23. doi: 10.1200/JOP.2010.000209
15. Devgan L, Powe N, Blakey B, Makary M. Wiki-surgery? Internal validity of Wikipedia as a medical and surgical reference. *J Am Coll Surg*. 2007;205(3):S76-7. doi: 10.1016/j.jamcollsurg.2007.06.190
16. Haigh CA. Wikipedia as an evidence source for nursing and healthcare students. *Nurse Educ Today.* 2011;31(2):135-9. doi: 10.1016/j.nedt.2010.05.004
17. Reavley NJ, Mackinnon AJ, Morgan AJ, Alvarez-Jimenez M, Hetrick SE, Killackey E, et al. Quality of information sources about mental disorders: a comparison of Wikipedia with centrally controlled web and printed sources. *Psychol Med*. 2012;42(8):1753-62. doi: 10.1017/S003329171100287X
18. Thompson AE, Graydon SL. Patient-oriented methotrexate information sites on the Internet: a review of completeness, accuracy, format, reliability, credibility, and readability. *J Rheumatol*. 2009;36(1):41-9. doi: 10.3899/jrheum.080430
19. Lavsa SM, Corman SL, Culley CM, Pummer TL. Reliability of Wikipedia as a medication information source for pharmacy students. *Currents in Pharmacy Teaching and Learning* 2011;3(2):154-8. doi: 10.1016/j.cptl.2011.01.007
20. Brokowski L, Sheehan AH. Evaluation of pharmacist use and perception of Wikipedia as a drug information resource. *Ann Pharmacother.* 2009;43(11):1912-3. doi: 10.1345/aph.1M340
21. Alkhateeb FM, Clauson KA, Latif DA. Pharmacist use of social media. *Int J Pharm Pract*. 2011;19(2):140-2. doi: 10.1111/j.2042-7174.2010.00087.x
22. Archambault PM. WikiBuild: a new application to support patient and health care professional involvement in the development of patient support tools. *J Med Internet Res*. 2011;13(4):e114. doi: 10.2196/jmir.1961
23. Culebras-Fernández JM, García de Lorenzo A, Wanden-Berghe C, Castiel LD, Sanz-Valero J. ¡Cuidado!, sus referencias bibliográficas pueden ser estudiadas. *Nutr Hosp*. 2008;23(2):85-8.
24. Yasseri T, Sumi R, Kertész J. Circadian Patterns of Wikipedia Editorial Activity: A Demographic Analysis. *PLoS ONE*. 2012;7(1):e30091. doi: 10.1371/journal.pone.0030091
25. Bateman A, Logan DW. Time to underpin Wikipedia wisdom. *Nature*. 2010;468(7325):765. doi: 10.1038/468765c
26. Peterson G, Aslani P, Williams KA. How do consumers search for and appraise information on medicines on the Internet? A qualitative study using focus groups. *J Med Internet Res*. 2003;5(4):e33.
27. Law MR, Mintzes B, Morgan SG. The sources and popularity of online drug information: an analysis of top search engine results and web page views. *Ann Pharmacother.* 2011;45(3):350-6. doi: 10.1345/aph.1P572
28. Giles J. Internet encyclopedias go head to head. *Nature*. 2005;438(7070):900-1.
29. Arias Maldonado M. Wikipedia y la Británica: la guerra de los mundos. *Revista de Libros*. 2010;165:24-5.

Nutrición Hospitalaria

Nutr Hosp. 2015;31(1):494-499
ISSN 0212-1611 • CODEN NUHOEQ
S.V.R. 318

Original/*Otros*

Role of ApoA1 on High-Density Lipoprotein: an intervention with plant sterols in patients with hypercholesterolemia

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Abstract

Background: Numerous studies have shown an inverse association between cholesterol´s concentration associated with High-Density Lipoprotein Cholesterol (HDL-C) and cardiovascular risk. The present study intends to investigate the possible relation between Apolipoprotein A (ApoA1) and HDL-C as a new strategy to reduce cardiovascular risk.

Aim: was determine the effect of ApoA1 in cholesterol´s metabolism through its influence on HDL-C in young adult population.

Methods: One clinical trial, controlled, randomized, double-blind, providing a commercial milk, "Naturcol", with sterols for 3 weeks (n = 19) and placebo (n = 16). A questionnaire *Ad Hoc* was designed and a complete anthropometric study was made. SPSS 21.0 was used to analyse the data.

Results: Significant differences were observed between sterol milk and placebo in a single marker, Low-Density Lipoprotein Cholesterol (LDL-C). A linear dispersion of data between HDL-C and ApoA1 was found, both at the beginning and end of the intervention (Person Correlation = 0.846 and 0.903, respectively). High dependency measures by linear regression (R^2= 0.715 and 0.816, respectively) were observed.

Conclusion: A significant relation between HDL-C and ApoA1 was proven. Taking into account the importance that HDL-C levels seem to have on cardiovascular health, ApoA1 is presented as an important clinical marker to improve heart function as well as to reduce cardiovascular risk.

(*Nutr Hosp*. 2015;31:494-499)

DOI:10.3305/nh.2015.31.1.8147

Key words: *ApoA1. Cholesterol. Cardiovascular risk. Plant sterols. High-density lipoproteins (HDL-C).*

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Recibido: 30-IX-2014.
Aceptado: 3-XI-2014.

PAPEL DE APOA1 EN LIPOPROTEÍNAS DE ALTA DENSIDAD: UNA INTERVENCIÓN CON ESTEROLES VEGETALES EN PACIENTES CON HIPERCOLESTEROLEMIA

Resumen

Antecedentes: Numerosos estudios han demostrado una asociación inversa entre la concentración de colesterol asociado a lipoproteínas de alta densidad de colesterol (HDL-c) y el riesgo cardiovascular. El presente estudio investigo la posible relación entre la apolipoproteína A (ApoA1) y el HDL-C como una nueva estrategia para reducir el riesgo cardiovascular.

Objetivo: determinar el efecto de ApoA1 en el metabolismo del colesterol a través de su influencia sobre el HDL-c en la población adulta joven.

Métodos: ensayo clínico, controlado, aleatorizado, doble ciego, proporcionando una leche comercial con esteroles, "Naturcol", durante 3 semanas (n = 19) y placebo (n = 16). Se diseñó un cuestionario *Ad Hoc* y se realizó un estudio antropométrico completo. Se utilizó el programa SPSS 21.0 para analizar los datos estadísticos.

Resultados: Se observaron diferencias significativas entre la leche de esterol y el placebo únicamente en un solo marcador, en las lipoproteínas de baja densidad del colesterol (LDL-c). Se encontró una dispersión lineal de datos entre HDL-C y ApoA1, tanto al principio y al final de la intervención (correlación de Person = 0,846 y 0,903, respectivamente). Se observó alta dependencia en la regresión lineal (R^2 = 0,715 y 0,816, respectivamente).

Conclusión: Una relación significativa entre el HDL-c y ApoA1 fue comprobada. Teniendo en cuenta la importancia que los niveles de HDL-c parecen tener en la salud cardiovascular, la ApoA1 se presenta como un importante marcador clínico para mejorar la función del corazón, así como para reducir el riesgo cardiovascular.

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Palabras claves: *ApoA1. Colesterol. Riesgo cardiovascular. Esteroles vegetales. Lipoproteínas de alta densidad (HDL-c).*