



Rivar
REVISTA IBEROAMERICANA DE
VITICULTURA, AGROINDUSTRIA
Y RURALIDAD

Editada por el Instituto
de Estudios Avanzados de la
Universidad de Santiago de Chile

THE DEVELOPMENT OF GEOGRAPHICAL INDICATIONS IN LATIN AMERICA: A BIBLIOMETRIC ANALYSIS



*El desarrollo de las Indicaciones
Geográficas en América Latina:
Un análisis bibliométrico*

*O desenvolvimento das Indicações
Geográficas em América Latina:
Um análise bibliométrico*

Vol. 12, N° 34, 1-22, enero 2025

ISSN 0719-4994

Artículo de investigación

<https://doi.org/10.35588/5f224w47>

Marcelo Chacana-Ojeda

Universidad Santo Tomás
La Serena, Chile

ORCID 0000-0002-2303-8509
mchacana@santotomas.cl

Willmer Guevara-Ramírez

Universidad Santo Tomás
La Serena, Chile

ORCID 0000-0001-9210-0786
willmerg80@gmail.com

Luis Martínez-Cháfer

Universitat Jaume I
Castelló de la Plana, España

ORCID 0000-0002-8343-938X
chafer@emp.uji.es

Francesc Xavier Molina-Morales

Universitat Jaume I
Castelló de la Plana, España

ORCID 0000-0002-2303-8509
molina@emp.uji.es

Recibido

21 de noviembre de 2023

Aceptado

5 de enero de 2024

Publicado

Enero de 2025

Agradecimientos

The authors acknowledge the financial support provided by the PID2021-126516NB-I00 Project funded by MCIN/AEI/10.13039/501100011033/FEDER, UE.

Cómo citar

Chacana-Ojeda, M., Guevara-Ramírez, W., Martínez-Cháfer, L. y Molina-Morales, F.X. (2025). The Development of Geographical Indications in Latin America: A Bibliometric Analysis. *RIVAR*, 12(34), 1-22, <https://doi.org/10.35588/5f224w47>

ABSTRACT

Geographical indications are instruments that enhance the value of traditional products associated with a territory, ensuring their protection and recognition in the markets. However, not all countries promote their products and heritages in the same way. In this context, the objective of this research is to evaluate the scientific production of Geographical indications in Latin American Latin American countries through a bibliometric analysis of publications indexed in Scopus. The results indicate that the Latin American countries leading the production are Brazil, Mexico, Argentina, Chile, and Colombia, which together with seven others produce 11.3% of the world's research in this field. There is evidence of low scientific collaboration between authors, organizations and Latin American countries. It is concluded that it is necessary to strengthen scientific collaboration and the involvement of Latin American governments to promote regional instruments for the recognition and protection of products from territories with special conditions in Latin American.

■ KEYWORDS

Latin America, Geographical Indication, Appellation of Origin, bibliometrics.

RESUMEN

Las Indicaciones Geográficas son instrumentos que realzan el valor de los productos tradicionales asociados a un territorio, asegurando su protección y reconocimiento en los mercados. Sin embargo, no todos los países promueven sus productos y patrimonios de la misma manera. En este contexto, el objetivo de la presente investigación es evaluar la producción científica de Indicaciones Geográficas en Latinoamérica mediante un análisis bibliométrico de publicaciones indexadas en Scopus. Los resultados indican que los países latinoamericanos que lideran la producción son Brasil, México, Argentina, Chile y Colombia, que junto con otros siete producen el 11,3% de la investigación mundial en este campo, y se evidencia también una baja colaboración científica entre autores, organizaciones y países de Latinoamérica. Se concluye que es necesario fortalecer la colaboración científica y el involucramiento de los gobiernos latinoamericanos para promover instrumentos regionales para el reconocimiento y protección de productos provenientes de territorios con condiciones especiales en Latinoamérica.

■ PALABRAS CLAVE

América Latina, Indicación Geográfica, Denominación de Origen, bibliometría.

RESUMO

As Indicações Geográficas são instrumentos que realçam o valor dos produtos tradicionais associados a um território, assegurando sua proteção e reconhecimento nos mercados. Mas não todos os países promovem seus produtos e patrimônios do mesmo jeito. Neste contexto, o objetivo da investigação é avaliar a produção científica de Indicações Geográficas em Latinoamérica mediante um análise bibliométrico de publicações indexadas em Scopus. Os resultados indicam que os países latinoamericanos que lideram a produção são Brasil, México, Argentina, Chile e Colômbia, que junto com outros sete produzem o 11,3% da investigação mundial neste campo. Evidencia-se também uma baixa colaboração científica entre autores, organizações e países de Latinoamérica. Conclui-se que é preciso fortalecer a colaboração científica e o envolvimento dos governos latinoamericanos para promover instrumentos regionais para o reconhecimento e proteção de produtos provenientes de territórios com condições especiais em Latinoamérica.

■ PALAVRAS-CHAVE

América Latina, Indicação Geográfica, Denominação de Origem, bibliometria.

Introduction

Geographical Indications are instruments that certify that a product is originated from a specific geographical area, where characteristics are established that derive in a specific quality (Ceï et al., 2021). These aspects have been the subject of research by several authors covering different contexts sociological, international regulations and regions. Studies recognize the breadth of topic, based on the treaties of the World Trade Organization and the trade-related intellectual property rights (Cardoso et al., 2022).

In the case of the European Union, the protection of Geographical Indications dates to 1992, and its purpose initial objective to prevent both the misuse and abuse of brands in the market, encouraging fair competition between producers, disseminating transparent and complete information for consumers, and supporting the dynamics of rural development, especially in lagging areas. The European Union distinguishes three types of legal quality designations for agricultural and food products: Denomination of Protected Origin, Protected Geographical Indication and Specialty Traditional Guaranteed (European Commission, 2023).

On the contrary, Latin American legislation is not standardized, in regarding their designations, the most used being Geographical Indications and Denominations of Origin, presenting ignorance and differences in essential aspects of the legal regime (Molina, 2015). However, the foundation is always the same, interest in giving protection to the names of local products that contribute to the formation of the cultural identity of a nation or locality.

Producers play a crucial role in a Geographical Indication registration (for example: wine, cheeses, coffee, meat products, fruits and vegetables, spices, among others). The producers collectively manage the common reputation of their product from Geographical Indication to obtain and maintain access to value-added markets. Geographical Indications benefit producers, increasing the visibility of products and promoting greater returns on investments made, where participation in a Geographical Indication is seen as a strategy of increasing quality and adding value to production. In this sense, a Geographical Indication has the potential to respond to these demands, protecting and identifying the origin of a product, its production characteristics, recognizing and protecting tradition, biodiversity, local knowledge and the link between product and its region of origin (Ceï et al., 2021).

While GIs can offer benefits to local producers and agents, some factors can make it difficult for producers to access the benefits provided by this designation, as the potential for Geographical Indications to be a development instrument depends on how local actors use their intangible assets. Another difficulty can sometimes be the rules and regulations, as extremely strict processes that end up excluding some producers, especially the less efficient ones, who may prefer to sell their products in the traditional market to deal with the incorporation of other costs to its production (Oledimna and Roper, 2021).

All the elements previously exposed highlight the need to disseminate the knowledge about Geographical Indications to develop collective strategies. Further knowledge leads to better product quality and recognition. Therefore, it becomes a priority to better inform and educate producers about the benefits and advantages of protecting Geographical Indications.

Given the wide scope of application and the relevance of Geographical Indications for territorial development, it becomes relevant to understand the main concepts and new trends which are frequently addressed in scientific literature. In this sense, the use of bibliometric analysis tools is very useful to analyze the dynamics and interactions of this field of knowledge. In this regard we can find studies of great relevance to help improve understanding of Geographical Indications related issues.

For example, Dias and Mendes (2018) using the search terms promoted by the EU: "Protected Designation of Origin", "Protected Geographical Indication" or "Traditional Specialty Guaranteed" recovered metadata on 577 publications published in the Web of Science (WOS), determining that the main clusters of research are related to four topics, "Olive Oil Certification and Cultivars", "Cheese and Milk Certification" and "Certification and Chemical Composition". In the case of the study by Cardoso et al. (2022) conducted a systematic review of the literature indexed in Scopus, with the objective of identifying barriers and benefits of Geographical Indications for producers. Determining that the main challenges are the inefficient organizational structures and institutions problems, as well as value appropriation by of the most powerful agents in the supply chain. While the main benefits are better access to markets with better prices, and the preservation of cultural identity. The research identifies that only 11% of the knowledge was generated in Latin America and the Caribbean, which raises the need to carry out a greater number of studies in this geographical area (Cardoso et al., 2022). More recently Singh and Bharti (2023) addressed GIs from the perspective of sustainable development and the impact on the environment. This bibliometric study used the Web of Science (WOS), which allowed him to recover the metadata of 194 articles, using the terms mentioned above. The authors observed that sustainability is related with the conservation of natural resources and the local population, and this in turn with the landscape management. In this case, the most prominent countries in the study of the topic are Europeans and the US, although there are some Asian and southern hemisphere countries (Singh and Bharti, 2023).

These investigations are references; however, it can be observed that there is a knowledge gap regarding research of this type that focuses on the space of knowledge of Latin American countries. In this context, the present research aims to analyze the main research topics in the field of knowledge of Geographical Indications and Denominations of Origin in the development environment of Latin American countries, considering the rest of the countries of the region as a standard of comparison world, and especially the leading countries in this subject, through the realization of a bibliometric analysis of research published in journals indexed in Scopus.

To fulfill this objective, we continue with a section that contains the methodological approach (source and methods), followed by the presentation of the analysis of the results. Finally, the conclusions/recommendations and future directions are presented in this paper.

Methodology

This section presents a description of data collection and methods used for subsequent processing to achieve the proposed objective.

Source

To carry out a bibliometric analysis, the metadata of the articles are used compiled in a scientific information base. In this case the data was obtained of the Scopus database. Which allowed the recovery of a greater number of documents than the WOS.

Table 1 shows relevant aspects of the recovery of metadata about research carried out in the field of knowledge of geographical indications. In the first search, two keywords were used: "geographical indication" and "appellation of origin" in the article title and keywords fields. A second search based on the results obtained previously, the countries of Latin America. Finally, a third compilation also based on the first, they only include Latin American countries. In all cases the results were excluded of the year 2023, so as not to affect the results of the trend-based analyses.

Table 1. Recovery of scientific articles published in Scopus on the geographical indications theme.
Tabla 1. Recuperación de artículos científicos publicados en Scopus sobre el tema de indicaciones geográficas

Parameters	General search description	Results
Query 1	(KEY ("appellation of origin") OR TITLE ("appellation of origin") OR KEY ("geographical indication*") OR TITLE ("geographical indication*")) AND (EXCLUDE (PUBYEAR, 2023))	1106 articles
Period	Excluded year 2023	1991-2022
Countries	No restriction	84 countries
Search description excluding Latin America		
Query 2	(KEY ("appellation of origin") OR TITLE ("appellation of origin") OR KEY ("geographical indication*") OR TITLE ("geographical indication*")) AND NOT AFFILCOUNTRY (Brazil OR Mexico OR Argentina OR Chile OR Colombia OR "Costa Rica" OR Ecuador OR Jamaica OR Guatemala OR "Trinidad and Tobago" OR Uruguay OR Venezuela) AND (EXCLUDE (PUBYEAR, 2023))	984 articles
Period	Excluded: year 2023	1991-2022
Countries	Excluding LATAM countries	72 countries
Search description limited to LATAM		
Query 3	(KEY ("appellation of origin") OR TITLE ("appellation of origin") OR KEY ("geographical indication*") OR TITLE ("geographical indication*")) AND AFFILCOUNTRY (Brazil OR Mexico OR Argentina OR Chile OR Colombia OR "Costa Rica" OR Ecuador OR Jamaica OR Guatemala OR "Trinidad and Tobago" OR Uruguay OR Venezuela) AND (EXCLUDE (PUBYEAR, 2023))	122 articles
Period	Excluded: year 2023	1991-2022
Countries	Excluding LATAM countries	12 countries
Search date	July 21th, 2023	

Source: own elaboration. Fuente: elaboración propia.

Methods

Figure 1 shows the structure of the bibliometric analysis, where, based on the metadata obtained, an analysis of the evolution of the topic over time was carried out. This to visualize the performance of this field over time and be able to establish comparisons between the group of Latin America countries and the rest of the countries of the world.

The second analysis carried out focused on evaluating the level of specialization of each one of the Latin America countries and the countries with the best performance in the subject worldwide. For this, the activity index (AI), calculated using equation 1. This indicator standardizes the number of articles published by a country in a specific topic with respect to the total national and world production of articles. Which allows comparisons to be carried out in a more objective way (Guevara-Ramírez et al., 2021).

$$IA_{iK} = \frac{(I_{ik}/I_i)}{(I_k/I)} * 100 \quad (1)$$

Where:

IA_{ik} : Index of scientific activity of country i in subject k .

I_{ik} : Research published in journals indexed in Scopus by country i on the subject k .

I_i : Research published in journals indexed in Scopus by country i throughout the theme.

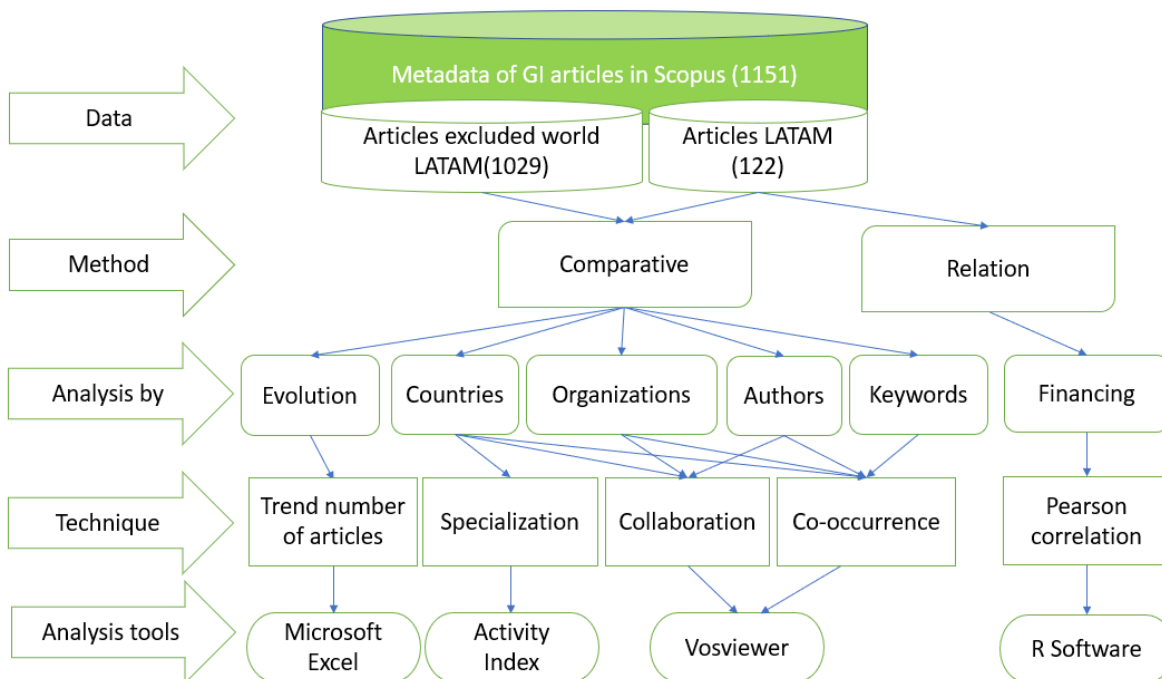
I_k : Sum of research published in journals indexed in Scopus by country comparison for topic k .

I : Sum of research published in journals indexed in Scopus by the countries of comparison for all themes.

Due to the small number of publications that can be computed during the period used, it is not possible to analyze the evolution of this indicator under a series model of time. Therefore, the IA was calculated using the total number of publications in the period. AI results for values greater than 100 mean that the country has specialization in the topic.

As a third step, maps or collaboration networks were built at the country level and organizations. Including the analysis of keyword maps, in order to identify the hot, emerging topics and most studied products both globally and in Latin America. The maps were made using the VOSviewer software, which has gained great popularity among researchers dedicated to the field of bibliometrics. Fundamentally given by its ability to build and visualize networks based on the main indicators of bibliometric analysis (Guevara-Ramírez et al., 2021).

Figure 1. Structure of bibliometric analysis
Figura 1. Estructura del análisis bibliométrico



Source: own elaboration. Fuente: elaboración propia.

Finally, to establish the degree of relationship that exists between the number of publications indexed and the number of publications that had funding was calculated on Pearson correlation coefficient. The results of this relationship will take a value between zero and one. What is interpreted is that, for values close to or equal to zero, there is no linear relationship between both variables, on the contrary, a value equal to or close to one means that the variables are highly related.

All the analysis carried out take as a standard of comparison of performance the publications carried out by all the countries of the world excluding from this set Latin American countries as explained in Table 1. Therefore, the results shown in this research will also provide useful references to understand the status of this worldwide theme.

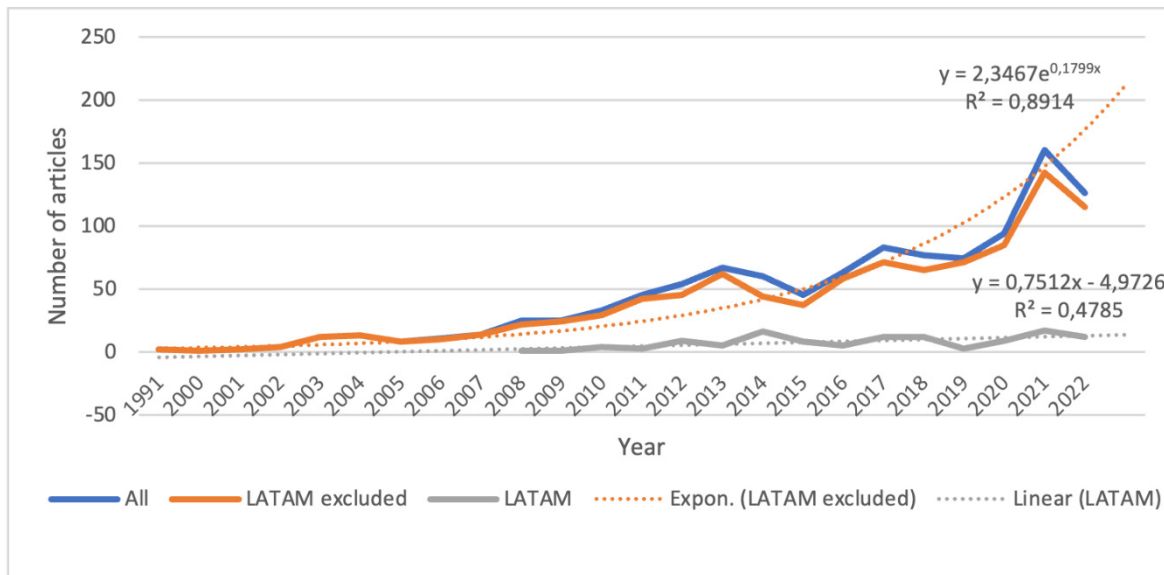
Results

Evolution of the number of investigations on Geographical Indications

Although Geographical Indications and Denominations of Origin are old topics, this field began to be published in Scopus in 1991. However, after that year no new research appeared until the year 2000, with significant growth beginning in 2003. Although the evolution of scientific production adjusts to a model with growth exponential with a coefficient of determination (R) of 0.89, can be observed in the series that there are some years that show a drop in the number of articles compared to the previous year (Figure 2). In the case of Latin America, its 122 publications represent the 11.03% of all research in this field. First publication appearing indexed in 2006. In general, the evolution of the number of articles in Latin

America does not present a statistically significant trend, maintaining discrete results with two peaks, one in 2014 with 16 and another in 2021 with 17 publications respectively.

Figure 2. Evolution of research activity on the Geographical Indication topic
Figura 2. Evolución de la actividad investigadora sobre el tema de las Indicaciones Geográficas

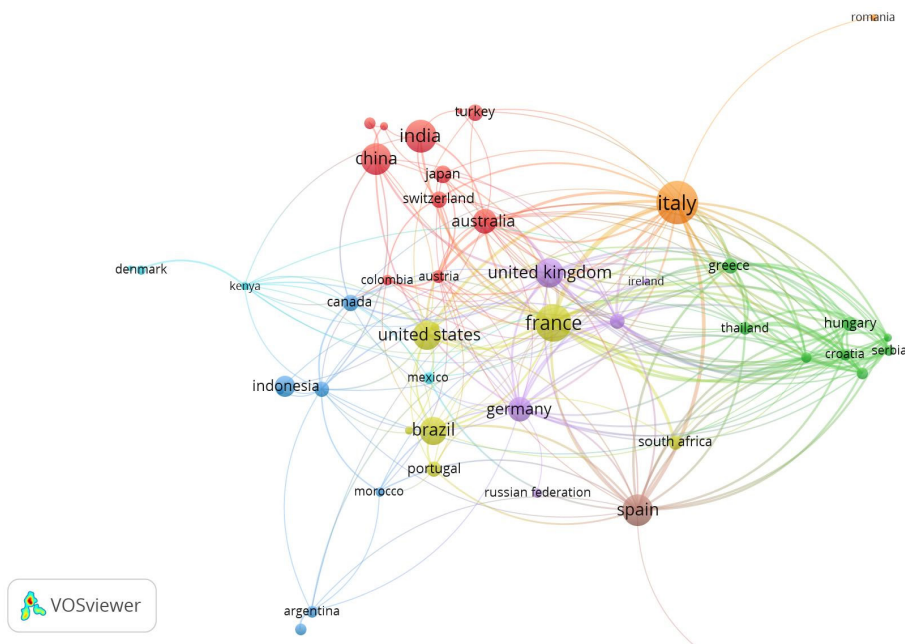


Source: own elaboration. Fuente: elaboración propia.

Performance by country

Regarding the most productive countries, in Figure 3 it can be seen only 44 countries have five or more documents. Highlights the leading role played by European countries, which are led in productivity and collaboration by Italy (166-131), France 124-143) and Spain (91-91). India (100-12), China (100-21) and USA (83-53) also stand out. Note that European countries stand out for being very collaborative, but not China and India. Regarding to Latin American countries, led by Brazil (73-26), also include Mexico (14-10), Argentina (13-11), Chile (13-3) and Colombia (11-15). As you can appreciate Colombia, despite being slightly the least productive, is the most collaborative country in terms of Latin American level. In general, except for Brazil, Latin American countries have low scientific productivity in this topic compared to world leaders. In this sense, the research by Cardoso et al. (2022) states that since the majority of research on Geographical Indications is carried out in European countries, it is necessary to promote studies in developing countries that raise the advantages and challenges that producers linked to Geographical Indications face.

Figure 3. Map of collaboration between all countries that research in the field of Geographical Indications (five or more posts)
Figura 3. Mapa de colaboración entre todos los países que investigan en el campo de Indicaciones Geográficas (cinco o más puestos)

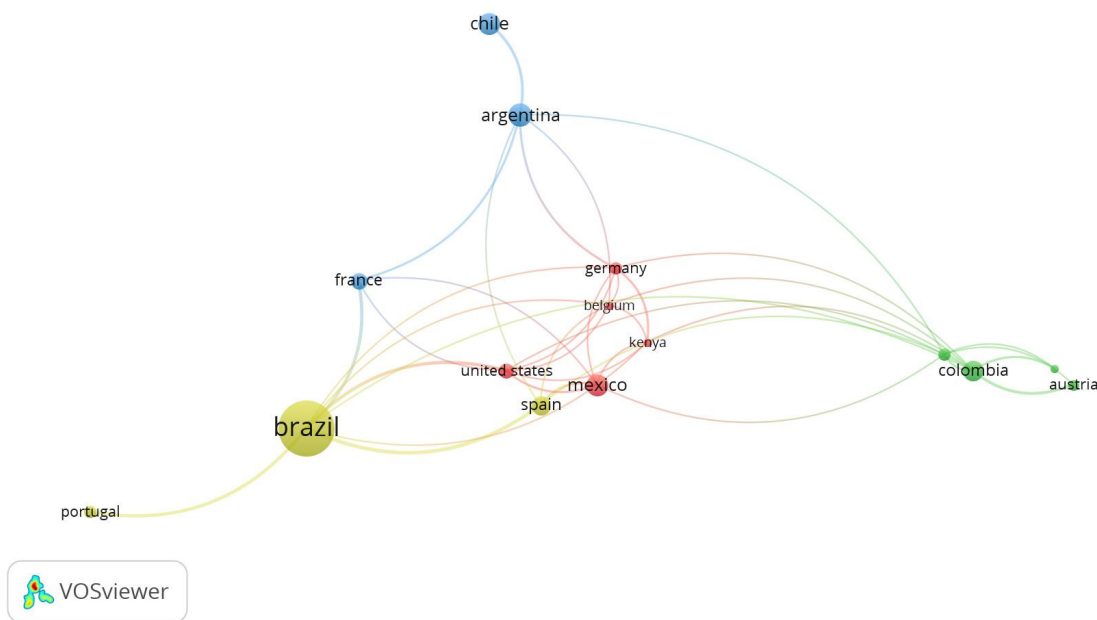


Source: own elaboration. Fuente: elaboración propia.

Collaboration between Latin America countries is low. Only some can be identified with a maximum frequency of three documents among countries (Figure 4). In other words, Latin America countries collaborate mainly with European countries and the United States. This low collaboration may mean that the issues are not addressed in depth regional challenges, and therefore, new mechanisms are not promoted for the recognition of Latin America's regional attributes, similar to what the European Union does. That it also recognizes the "traditional specialty guaranteed as a protection mechanism", in which the traditional aspects are highlighted, such as the way of making the product or its composition, without being linked to a specific geographical area"; the "mountain product" that recognizes the specificities of a product, made in mountainous areas, with difficult natural conditions, and agriculture in the regions outermost regions of the European Union, considering the difficulties associated with remoteness and insularity, which cause difficult geographical and meteorological conditions (European Commission, 2023).

Figure 4. Map of collaboration between Latin American countries that research in the field of the Indications of Origin

Figura 4. Mapa de colaboración entre países de Latinoamérica que investigan en el campo de las Indicaciones Geográficas



Source: own elaboration. Fuente: elaboración propia.

The results of specialization (AI) in the subject also place Italy as a world leader. In the Latin American countries, Colombia is the most specialized country, despite being the least productive country among those that lead the issue in the region. In general, among the world leaders China is the only country that does not have specialization. Meanwhile, between among the leaders of Latin America, Mexico is the only one that does not have specialization, that is, it has an AI value of less than 100 (Table 2).

Table 2. Scientific activity index of the most productive countries worldwide and in LATAM
Tabla 2. Índice de actividad científica de los países más productivos a nivel mundial y en LATAM

World leaders			Latin American leaders		
Country	Documents	IA	Country	Documents	IA
Italy	166	234	Brazil	73	167
France	124	167	Mexico	14	99
China	100	30	Argentina	13	156
India	100	109	Chile	13	173
Spain	91	159	Colombia	11	180

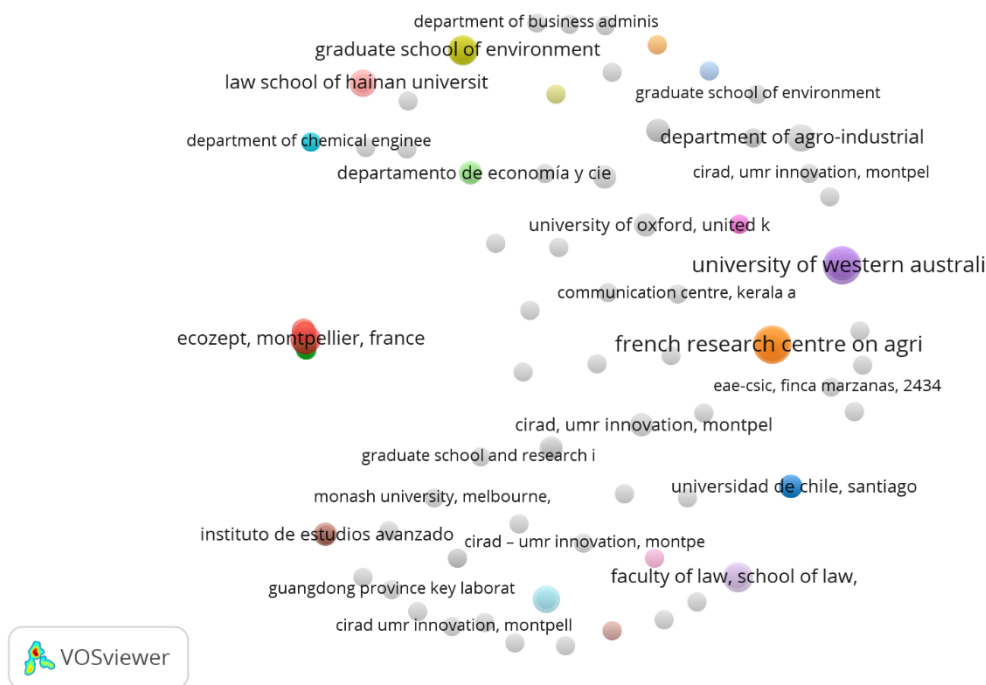
Source: own elaboration. Fuente: elaboración propia.

Performance by organizations

When analyzing the performance of organizations that contribute to research on Geographical Indication and Denomination of Origin, it is observed that of 1972 organizations that present publications, only 119 they have three or more articles in collaboration (Figure 5). Which implies that in general there is little collaboration between organizations that research in this field. Being the most prominent organizations CIRAD (French Research Center on Agriculture for Development) and the University of Western Australia, Australia, with eight documents in collaboration each. In the case of Ecozept, Montpellier, despite being a private marketing consulting agency and market research company (based in France), it collaborates with a greater number of organizations.

Figure 5. Institutions that lead the research clusters in the Geographical Indication topic (three or more publications)

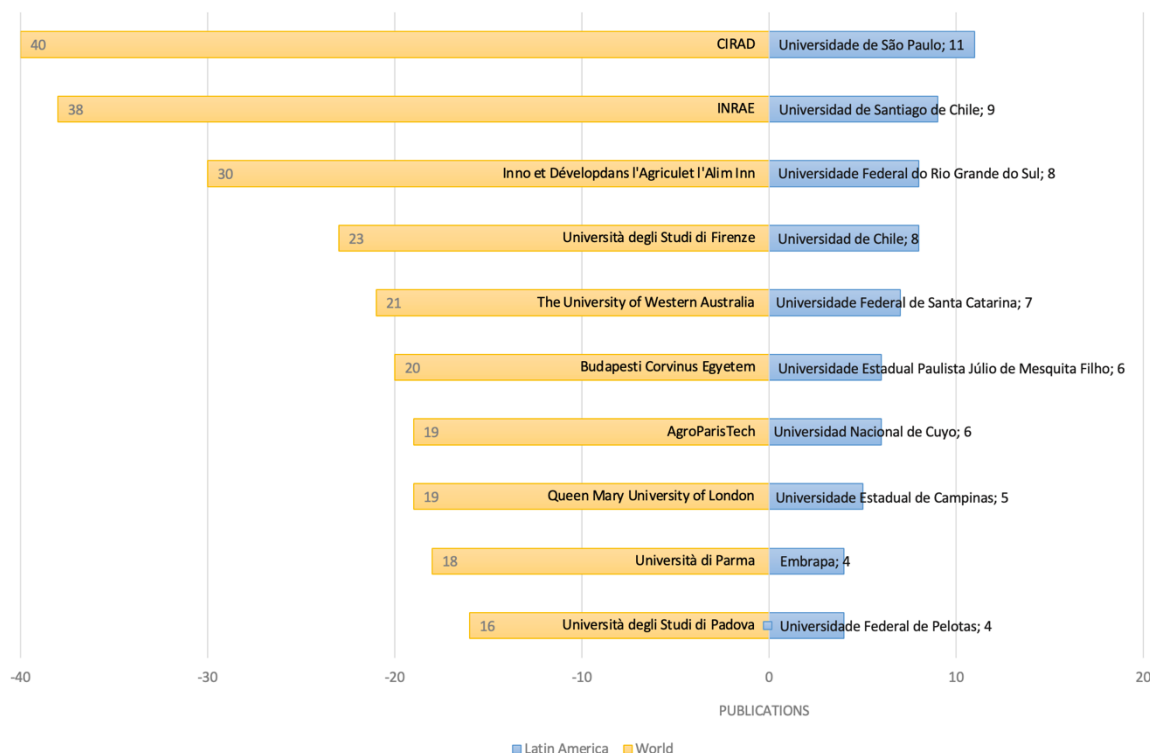
Figura 5. Instituciones que lideran los grupos de investigación en el tema de Indicación Geográfica (tres o más publicaciones)



Source: own elaboration. Fuente: elaboración propia.

In the case of Latin America, it is not possible to build a collaboration network for the organizations. Figure 6 shows the top ten most productive organizations at a global level and at the level of Latin American countries. In the first case, they lead the European organizations, and in Latin America the Brazilian and Chilean ones.

Figure 6. Organizations with the greatest scientific production (Latin America vs world)
Figura 6. Organizaciones de mayor producción científica (Latin America vs mundo)



Source: own elaboration. Fuente: elaboración propia.

More productive researchers

At the author level, PhD Michael Blakeney, who has focused several of his investigations on legal aspects of the protection mechanisms for GIs as for the average number of citations per document (CPP) worldwide, led by PhD Andrea Marescotti who studies issues associated with indications geographic areas and their relationship with the environment (Table 3). Likewise, the knowledge space in Latin America is led by PhD Pablo Lacoste, who has an outstanding track record in historical research that enhances heritage cultural history of some countries in the South American cone such as Chile, Argentina, and Peru. This, along with other Chilean researchers such as PhD Diego Jiménez, PhD Bibiana Rendón, PhD Natalia Soto, and PhD Amalia Castro, have formed one of the most important clusters in the region, dedicated to promote studies related to cheese and pisco (Lacoste et al., 2013, 2015).

Table 3. Most productive authors in the field of Geographical Indications and Denominations of Origin, world vs Latin America
Tabla 3. Autores más productivos en el campo de Indicaciones Geográficas y Denominaciones de Origen, mundo vs América Latina

World				LATAM			
Author	Documents*	Country	CPP*	Author	Documents*	Country	CPP*
Blakeney, M.	23	Australia	7,6	Lacoste, P.	8	Chile	6,3
Marie-Vivien, D.	15	Italy	33,3	Jiménez, D.	6	Chile	7,8
Belletti, G.	15	France	13,9	Pasador, J.L.	5	Brazil	2,4
Török, Á.	13	Hungary	9,9	Rendón, B.	5	Chile	6,4
Marescotti, A.	13	Italy	38,7	Soto, N.	5	Chile	7,4
Casabianca, F.	12	France	10,4	Lourenzani, A.	4	Brasil	1
Biénabe, E.	10	France/South Africa	13,4	Fracarolli, G.S.	4	Brazil	2,3
Kohsaka, R.	9	Japan	10,8	Castro, A.	3	Chile	8
Bienabe, E	9	France	8,8	Artêncio, M.	3	Brazil	6,6
Penker, M.	10	Austria	23,0	Giraldi, J.M.E.	3	Brazil	5,7
Average			16,98	Average			5,39

*The average number of documents and citations per document is constructed considering only the results obtained under the search terms, therefore, it does not constitute an integrated evaluation of the researchers. Source: own elaboration. *El promedio de documentos y citas considera únicamente los resultados obtenidos bajo los términos de búsqueda, y no corresponde a una evaluación de los investigadores. Fuente: elaboración propia.

Key topics studied

Figure 7 shows the keyword map that identifies hot topics and emerging issues worldwide excluding Latin American countries. The hot topics are those of greatest attention by researchers, these are identifiable by having the largest circumferences.

In this case, the most addressed topics are Geographical Indication (GI), Protected Geographical Indication (PGI), and Protected Designation of Origin (PDO). In general, Geographical Indication refers to products that receive names based on particular characteristics that transmit a specific geographical space, which is related to identity cultural and historical of specific agricultural products, which presents qualities and/or reputation that are due to a place (Bowen, 2020). These characteristics can favor producers if they are high-quality scarce products (Moschini et al., 2008). Which although it must be considered elements such as the length of the supply chain and the value added to the product agricultural (Deselnicu et al., 2013). In summary the main benefits that GI offers are better prices, greater access to markets and preservation of cultural identity (Cardoso et al., 2022). However, it must be understood that under European regulations, there is a difference when it comes to recognizing and protecting a product according to the connection with a territory. For example, products under PDO have the most links strong with the place, that is, both the raw materials and the production processes must develop in its entirety at the origin. On the other

hand, in the case of PGI, at least one of the production, processing or preparation stages takes place in the region (European Commission, 2023).

From the above, it is important to point out the connection that these terms have with the *terroir* concept given that by definition the protection and legal recognition of the authenticity and therefore the intrinsic quality of a product is based on the place geographic (Gade, 2008). Although *terroir* can be interpreted as a geographic concept determined by specific conditions that are determined by climate, soil and cultivation, human practices given by cultures and traditions of that environment (Leeuwen and Seguin, 2007). Which leads us to understand the relevance of the occurrence of the term traditional knowledge and its connection with the Geographical Indications.

Also, the keyword trademarks have a significant frequency of occurrence. This is due to the fact that trademarks are one of the main mechanisms of protection of intellectual property rights (WIPO, 2023). The protection mechanism trademarks emerged at the end of the 19th century as a tool to protect the identity of products through a registered trademark, in what is known as the trademark system Madrid (Martínez-Arnáiz et al., 2022). The relationship between the Protected Designation of Origin and registered trademarks is addressed in the 1958 Treaty "Lisbon Agreement for the Protected Designation of Origin and its international registration", presenting its latest update through the Geneva Act of 2015, which regulates the registration and guarantees the protection of Denomination of Origin and Geographical Indication before the World Food Organization. Intellectual Property (WIPO) (Martínez-Arnáiz et al., 2022). Additionally, we must consider the development of registered trademarks for products with Geographical Indication that constitutes a territorial marketing policy that helps economic growth of the regions (Santeramo et al., 2022), especially the "rural development" that has been another of the topics frequently addressed. Another aspect that has focused attention of the world's researchers are the TRIPS agreement (TRIPS) which constitute essential mechanisms to protect Protected Designations of Origin and Protected Geographical Indications (Huysmans, 2022).

On the other hand, emerging themes can be identified by yellow, and it means they are topics that are recently focusing the attention of researchers. Inside of the emerging most addressed terms in scientific research linked to the GIs worldwide can be identified: *sustainability, climate change, organic farming, traditional food, and public policy*. In relation to the terms *sustainability, climate change* the study carried out by Xian et al. (2022) analyzed the effects of different scenarios and habitats of Geographical Indications in citrus, which were displaced northward from their initial location due to *climate change*. Consequently, they recommended strengthening intergovernmental cooperation to achieve carbon neutrality and control temperature increase, and with respect to policies, they suggested rural revitalization through the development of climate-smart agriculture.

Regarding the terms: *organic farming, traditional food* are studied by Fernández-Ferrín et al. (2019) through ethnocentrism (cultural practices and perspectives that distinguish a community of people) from the consumer, which has a direct effect in the purchasing behavior of products with Geographical Indication, and indirect through a positive attitude towards proximity, traditional character, respect for the environment and production with a focus on organic agriculture. Regarding the term *public policy*, literature is extensive on the political economy of agricultural and food policies, but much of it focuses on tariffs and subsidies.

turity and integration. Governance studies on products with Geographical Indication and Denomination of Origin highlight and two words interrelate: *institutions* and the governance and development of the *territory*. This last word should not be confused with the appearance of the term *terroir*, which, as I explained previously, it is the concept that gives rise to the Geographical Indication and Denomination of Origin because it is the one attributed to specific qualities of a product given its place of origin. Another relevant topic is the studies on *intellectual property* although Geographical Indication and Denomination of Origin constitute an intellectual property protection mechanism, which in particular seek to protect the collective territorial heritage and even the regulation of value chain actors (Quiñones-Ruiz et al., 2015).

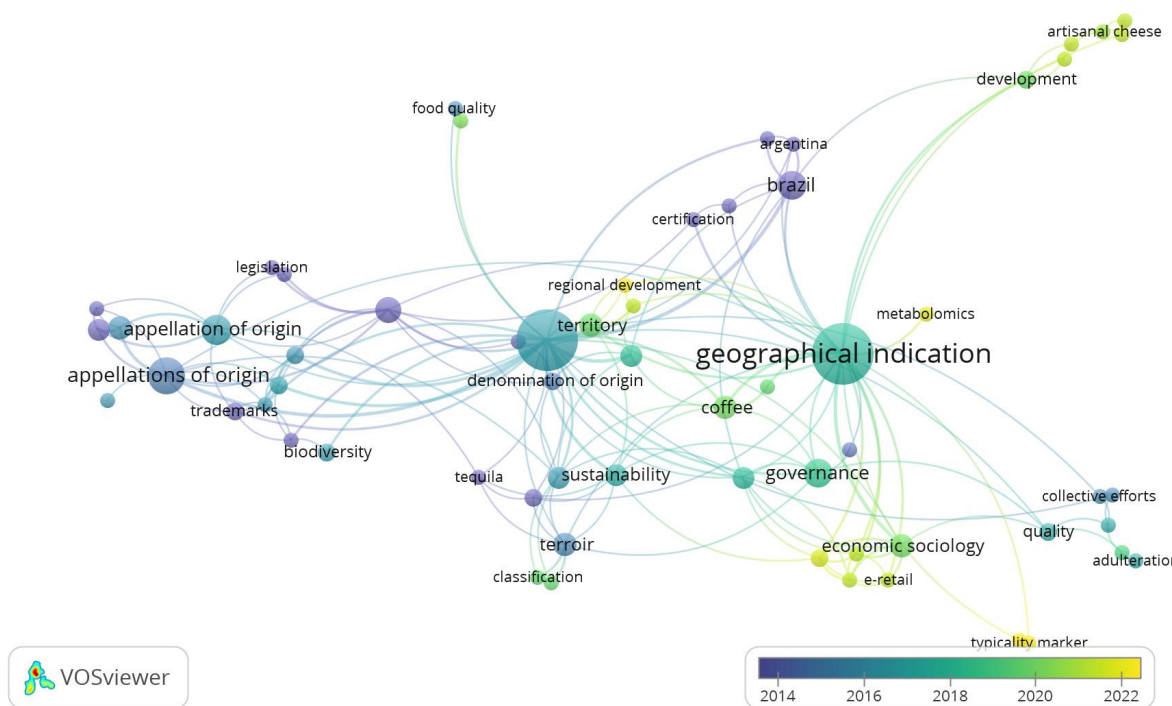
The concept of *economic sociology* has also been considered in studies on Geographical Indication in Latin America. A branch of *economic sociology* that studies market performance and institutional influence. Producers create formal structures that allow them to establish dialogues with governments, seeking to establish differentiated or protected treatment through *intellectual property* protection instruments such as the Geographical Indications (Fracarolli, 2021).

In the case of studies that address *sustainability*, they mainly focus on environmental and socioeconomic sustainability (Bowen, 2010). For his part, (Vandecandelaere et al., 2021) proposes four pillars (economic, social, environmental and governance) to address the sustainability of Geographical Indication, that is, governance for the in the case of Geographical Indications, it is a key criterion on the path to sustainability. It is important to point out that, although “sustainability” is beginning to stand out in Latin American studies, unlike other regions does not appear linked to “climate change” mitigation among the most treated or emerging.

Among the emerging topics most addressed in Latin America is “territorial development”, which is a topic that also appears on the list of the most addressed by global level. It also highlights “public policies” that play a fundamental role in avoid failures in the valuation strategies and policies of the Geographical Indication and Denomination of Origin. Other groups of recent studies have made comparisons between the economic blocks European Union and Mercosur, from the perspective of the presence of products with Geographical Indication and Denomination of Origin in electronic commerce (e-retail).

Figure 8. Keyword co-occurrence map of hot and emerging topics in the research on Geographical Indication and Denomination of Origin, in Latin American countries (frequencies 2 or more)

Figura 8. Mapa de coocurrencia de palabras clave de temas candentes y emergentes en las investigaciones sobre Indicación de Origen y Denominación de Origen, en los países de América Latina (frecuencias 2 o más)



Source: own elaboration. Fuente: elaboración propia.

Goods or products most addressed within the Geographical Indication and Denomination of Origin theme

In Figures 4 and 5 you can see the most discussed goods or products in the research on Geographical Indication and Denomination of Origin worldwide and in Latin American countries. The latter include wine, coffee, cheese, followed by the brandy-pisco family (spirits of grapes). In the rest of the countries, studies related to wine also stand out, coffee, rice, cheese, and olive oil. In the case of this last product, it is significant how treated it has been by the Latin American countries, given that two countries in this region (Chile and Argentina) are in the top ten of the export leaders in the market olive oil. Table 4 presents a summary of the most studied products in the field of Geographical Indication and Denomination of Origin in Latin America and the rest of the countries, given by the frequency of use the keyword in its different forms.

Table 4. Goods most addressed in research on Geographical Indication and Denomination of Origin in Latin American vs the rest of the countries

Tabla 4. Bienes más abordados en las investigaciones sobre Indicación Geográfica y Denominación de Origen en la América Latina vs el resto de países

Products of Latin America	Frequency	Rest of the world products	Frequency
Wine	17	Wine	55
Pisco	5	Rice	20
Olive oil	1	Olive oil	16
Coffee	9	Coffee	12
Cheese	7	Cheese	11
Cáhuil salt	1	Honey	8
Tequila	2	Tea	7
Artisans	2	Handicrafts	5
Grape brandy	6	Pálinka	3
Cocoa	3	Argan oil	2
Cassava flour	2	Garlic	2
Agave	1	Karoo lamb	2
Artisanal food	1	Lemon juice	2
Balsamic vinegar	1	Mango	2

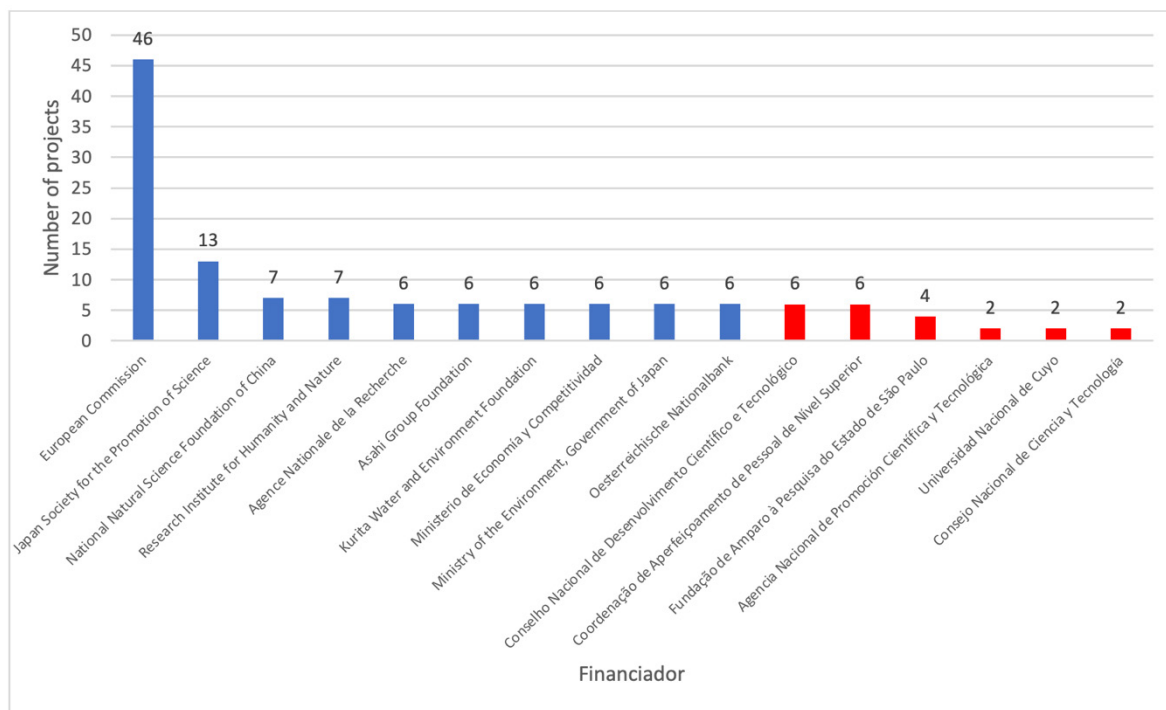
Source: own elaboration. Fuente: elaboración propia.

Bowen (2010) in his study exposes the case of tequila that provides the example of a Geographical Indication that is not being managed to effectively promote rural development sustainability. Large distilleries and multinationals capture most of the aggregate value associated with the industry. Therefore, the growth of the tequila market has not substantially benefited agave producers or the rural population. Case studies of emblematic products such as Colombian coffee and tequila from Mexico, report lack of coordination and collaborative work between actor's business and the carelessness of public policy managers, possibly due to the degree maturity of productive relationships and little concern for strengthening long-term association in value chains in Latin American countries (Bowen, 2010; Quiñones-Ruiz et al., 2015).

Government support for research on the Geographical Indication and Denomination of Origin topics (financing)

The countries that have financed the greatest amount of research on Geographical Indication and Denomination of Origin are the European countries and China. Led by the European Commission, the Society for the Promotion of science, and the Chinese National Natural Science Foundation. On the other hand, for Latin American countries, the only institutions that stand out in the top ten are Brazilian. In general, it is logical to set a high relationship between financing and scientific productivity expressed in numbers of publications. What can be verified by the high correlation (0.9802) that exists between both variables in the case of Latin America. In Figure 9, in red, you can observe which are the institutions that contribute the most to the financing of the subject in question Latin America.

Figure 9. Main funders of research on Geographical Indication and Denomination of Origin
Figura 9. Principales financiadores de investigaciones sobre Indicación Geográfica y Denominación de Origen



Source: own elaboration. Fuente: elaboración propia.

Conclusions

European countries lead the knowledge space in the field of Geographical Indication. At the time, only some Latin American countries such as Brazil, Argentina, Chile, and Colombia have demonstrated some degree of specialization towards this topic. In this sense it takes vital importance of a more dynamic role for the governments of the region to identify and enhance local attributes through the involvement of researchers and promotion instruments that involve all local actors around their agricultural productions that have special characteristics.

An example was the program called “Seal of Origin” of the Government of Chile, which through the National Institute of Industrial Property (INAPI), which seeks to promote the use and protection of Chilean products through the registry of Geographical Indications and Denominations of Origin. Another example is the Integrated Territorial Program (PTI) of pisco¹ that through a public instrument of the government of Chile by the Corporation for the Promotion of Production (CORFO) seeks to rescue the productive traditions of small pisco producers in the regions of Coquimbo and Atacama.

¹ Pisco has the longest-standing designation of origin in South America when in 1931 by presidential decree the origin of Pisco was established as: “spirit produced and packaged, in consumer units, in regions III and IV of the country” (in DFL-181, 15th May 1931, Decreto con fuerza de Ley n° 181).

It was determined that there is a knowledge gap in the field of Geographical Indications related to olive oil in Latin America. Therefore, given the important commercial position that they have reached countries like Chile and Argentina have met the competitive market for this good, it is important to generate new research that helps improve competitive advantages of the Latin American countries supported by the benefits generated by knowledge and appreciation of products with Geographical Indications and Denominations of Origin.

Latin American researchers in general respond to the main dimensions of Geographical Indications in accordance with global trends. However, there is no observed systematicity in the results that allows projecting a growth of these investigations with a statistical trend similar to that shown by the researcher's global level.

On the other hand, given the little collaboration between Latin American researchers in the area of Geographical Indication, it is recommended to strengthen collaboration between the main organizations and researchers in the region. This with the aim of promoting the recognition of Geographical Indication in these countries as a mechanism to achieve competitive advantages in commerce, in addition to rescuing and protecting the traditional values of the territories. At the same time, research should also promote other regional instruments (similar to the European Union) for the recognition and protection of products from territories with special conditions through regional trade agreements and the regional international cooperation mechanisms. To achieve these challenges, greater involvement of Latin American governments is essential so that through their scientific promotion agencies, they promote financing for research in this field.

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