



A bibliometric analysis of Indonesian ethnic food studies

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Abstract

This study examines the evolution and growth of research on ethnic cuisine in Indonesia over a thirty-year period (1993–2023) using a bibliometric analysis. The findings revealed that research in this field has grown with an average annual expansion of 6.7%. Thematic evolution highlights a shift in focus from the cultural and regional aspects of ethnic cuisine to scientific and nutritional dimensions, such as health benefits, functional foods, and modernized practices. Additionally, this study identifies key trends, including the role of gender and age in shaping food preferences, the contrasts between rural and urban dietary behaviors, and influence of globalization on traditional food systems. A trend of collaborative research was observed, with international partnerships involving nations such as Malaysia, Japan, China, and Canada underscoring the global appeal and relevance of Indonesian ethnic food research. This study highlights the growing interdisciplinary and international nature of research in this field. Recommendations for future studies include exploring diverse perspectives, and expanding cross-national research to address the dynamic challenges and opportunities in ethnic cuisine studies.

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1. Introduction

Ethnic cuisine is an essential element of a nation's cultural identity (1,2). As a country renowned for its rich cultural heritage and ethnic diversity, Indonesia has a highly diverse and unique culinary legacy that reflect the traditions, history, and local wisdom (3,4). Ethnic and cultural diversity is a source of inspiration for the continuously evolving culinary research from cultural, scientific, and economic perspectives (5,6).

The uniqueness of Indonesian ethnic foods is evident in traditional recipes passed down through generations, often accompanied by distinctive cooking methods and abundant local ingredients (7,8). Natural ingredients such as spices, fresh vegetables, and seafood characterize Indonesian ethnic foods, offering complex flavors and significant health benefits (9,10). Traditional spices in these dishes enhance their distinctive aroma and possess antioxidant and medicinal properties (11). Indonesian ethnic food represents a synergy between culture, local wisdom, and science (12,13).

In recent decades, research on ethnic food has emerged as an increasingly prominent topic across various fields such as anthropology, history, food science, and health and nutrition (4,14–16). These studies aim to document culinary traditions and reveal their inherent values, such as health benefits, sustainability, and economic opportunities, which can be developed from local culinary heritage (16,17). However, despite its significance, Indonesian ethnic food often receives less attention in global academic discourse than other countries promoting their national cuisines as part of cultural diplomacy (6,18).

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Social and economic changes have also influenced perspectives on ethnic cuisine (19). On the one hand, globalization provides opportunities to promote Indonesian ethnic food internationally (15,16). However, modernization and urbanization threaten the sustainability of local culinary traditions due to shifting consumption patterns (20,21). Therefore, understanding the dynamics of research on ethnic cuisine is crucial for preserving cultural heritage while enhancing the economic potential of the traditional culinary sector (15,22,23).

Bibliometric analysis is an approach that allows researchers to systematically and quantitatively evaluate the development of research in a particular field. This approach provides insights into research trends, identifies key themes, fosters research collaboration, and highlights the contributions of institutions and countries. In the context of ethnic cuisine in Indonesia, bibliometric analysis can offer a deeper understanding of how this topic has been studied over the past three decades, and how future research directions can be shaped. This study aimed to identify trends in research topics, understand the interconnections among these topics, and determine how research focus has shifted over time. Additionally, this study aimed to investigate potential collaborations between Indonesian and international researchers in ethnic culinary studies.

The research questions were as follows:

1. How have publications on ethnic cuisine in Indonesia evolved over the past three decades (1993-2023)?
2. What are the most researched topics in Indonesian ethnic cuisine?
3. What is the connection between the various research topics?
4. How does the topical development of ethnic cuisine research in Indonesia fluctuate over time?
5. How do Indonesian and international researchers collaborate to investigate Indonesian ethnic foods?

This study contributes to our understanding of research on ethnic food in Indonesia. Analyzing the existing literature provides in-depth insights into the trends and developments in this field. This information can serve as a resource for future research, policy development, and global promotion of Indonesian ethnic food. Moreover, this study can strengthen collaborations between Indonesian and international researchers in ethnic culinary studies, thereby enhancing appreciation of Indonesia's culinary heritage.

2. Materials and Methods

This study employed bibliometric analysis, which is a quantitative study that investigates publication patterns in scientific literature (24). The objective is to comprehend the evolution and concentration of research on ethnic food in Indonesia over a thirty-year period (1993-2023). The Data for this study were collected from Scopus, one of the world's largest scientific literature databases, covering a broad spectrum of disciplines, on June 12, 2023. A data search was conducted using the following keywords: TITLE-ABS-KEY ("traditional food" OR "traditional cuisine" OR "old cuisine" OR "ethnic cuisine" AND Indonesia) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SRCTYPE, "j")). These keywords were designed to identify documents pertaining to Indonesian ethnic food. The restriction of documents to "ar" (article) and "j" (journal) sources ensures the relevance and quality of the documents analyzed.

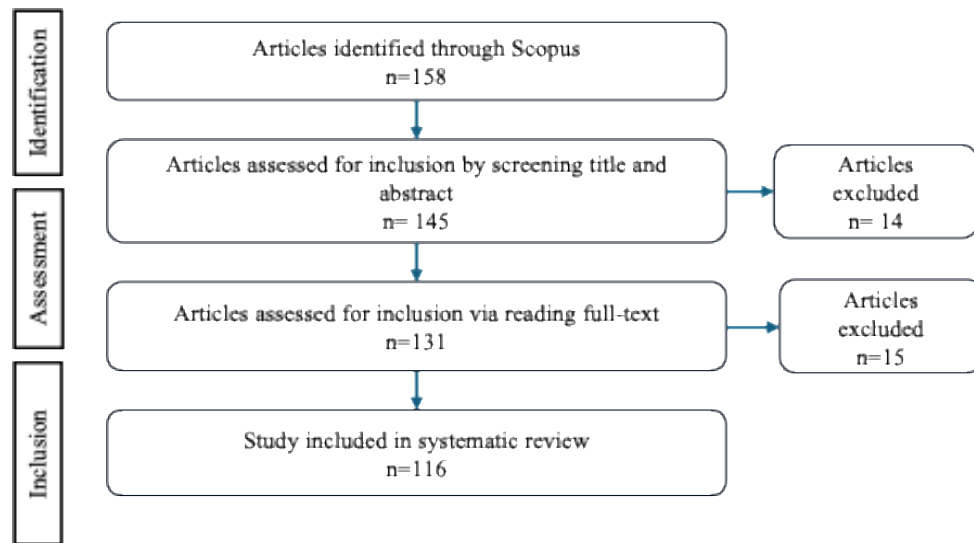


Figure 1. Literature review flow.

Bibliometrix, a software application for R, was used to analyze the data. Bibliometrix is a tool designed specifically for bibliometric analysis that provides a series of functions that simplify data analysis and visualization (25). First, Scopus data were imported into the bibliometric system. Baseline analysis was conducted to determine the evolution of the distribution of documents, authors, and sources. Subsequently, data visualization was conducted to provide a visual summary of the findings. This diagram illustrates the analysis of topic trends, co-occurrence networks, thematic evolution, and collaboration maps. The topic trend analysis identifies the most prevalent topics in the literature. The co-occurrence network illustrates the relationships between various topics. Thematic evolution illustrates how the research focus has shifted over time, and the collaboration map displays the collaborative relationships between Indonesians and international researchers. The steps used in this study are visualized in Figure 1.

3. Results and Discussion

3.1. Results

3.1.1. Main Information

Information on regarding the data used in this bibliometric analysis is provided in Table 1. The 84 sources used in the bibliometric analysis, which span the years 1993 - 2023, were from a variety of sources, including books and journals. During that period, 116 papers that are pertinent to the investigation of Indonesian ethnic food have been located and examined. The 6.7% yearly growth rate shows the rate of research in this area. The average age of the documents is 4.57 years, and each one receives 10.03 citations on average. This analysis found 645 distinct keywords (ID) and 466 author-defined keywords (DE) out of a total of 4089 references.

Table 1. Profile of data.

Description	Results
Timespan	1993:2023
Sources (Journals, Books, etc)	84
Documents	116
Annual Growth Rate %	6.7
Document Average Age	4.57
Average citations per doc	10.03
References	4089
Keywords Plus (ID)	645
Author's Keywords (DE)	466
Authors	420
Authors of single-authored docs	8
Single-authored docs	10
Co-Authors per Doc	3.97
International co-authorships %	19.83
Article	116

This study made note of the author’s aspect, noting that 420 authors contributed 116 documents. It is interesting to note that only eight separate contributors contributed to the document. This illustrates how frequently the authors collaborated in this study. In reality, there are 3.97 authors on average for each document. Additionally, 19.83% of the authors worked in other countries. All the 116 documents evaluated were articles in terms of document type. This demonstrates that journal articles are the primary format in which this type of research is conducted and published.

3.1.2. Authors’ Impact

Table 2 demonstrates that numerous authors' works have had a large local impact. As an illustration, Soma T., who has made a substantial contribution to this field, has the highest h-index of 3, with a total of 45 citations from 3 articles since 2017. Daryono and Fachrial also showed a positive influence, with an h-index of 2.

Table 2. Author local impact.

Element	h_index	g_index	m_index	TC	NP	PY_start
Soma T	3	3	0.429	45	3	2017
Daryono BS	2	2	0.286	20	2	2017
Fachrial E	2	3	0.200	22	3	2014
Jamsari J	2	2	0.200	19	2	2014
Navia ZI	2	2	0.667	13	2	2021
Pratama YE	2	2	0.667	7	2	2021
Suwardi AB	2	2	0.667	17	2	2021
Syukur S	2	2	0.200	22	2	2014
Waluyo J	2	2	0.400	14	2	2019
Abas F	1	1	0.091	21	1	2013

Several authors who are relatively new to the area, but already have a substantial impact, are also present. The h-index of 2 attained by Navia Z.I., Pratama Y.E., and Suwardi A.B., who only began their publications in 2021, indicates their large and quick influence. Authors like Waluyo J. and Syukur S. have also made contributions to this field; Syukur S has

been publishing since 2014, and Waluyo started publishing in 2019. Both authors reported an h-index of 2.

3.1.3. Most Relevant Sources

The sources listed in Table 3 are important for the investigation of Indonesian ethnic foods, some of which have contributed significantly. Based on the number of papers published, "Biodiversitas", which includes 13 articles, is the most pertinent source. This demonstrates the importance of biodiversity to scholars in this field.

Additionally, the "Journal of Ethnic Foods" made a significant contribution to six papers, highlighting the importance of this journal for distributing information about ethnic foods. Other sites that published three articles each included "Open Access Macedonian Journal of Medical Sciences" and "Research Journal of Pharmaceutical, Biological and Chemical Sciences," which also contributed to the platform for this research.

Table 3. Most relevant sources.

Sources	Articles
Biodiversitas	13
Journal of Ethnic Foods	6
Open Access Macedonian Journal of Medical Sciences	3
Research Journal of Pharmaceutical, Biological and Chemical Sciences	3
British Food Journal	2
Canrea Journal: Food Technology, Nutritions, and Culinary Journal	2
Current Research In Nutrition and Food Science	2
Food and Foodways	2
Food Research	2
Indian Journal of Public Health Research and Development	2

A number of other journals, including the "British Food Journal," the "Canrea Journal: Food Technology, Nutrition, and Culinary Journal," the "Current Research in Nutrition and Food Science," the "Food and Foodways," the "Food Research," and the "Indian Journal of Public Health Research and Development," have also published two articles, demonstrating their significant contribution to ethnic food research in Indonesia.

3.1.4. Most Global Cited Documents

Table 4 provides insight into significant works in the investigation of ethnic food in Indonesia through an examination of the most widely cited journal papers worldwide. The paper by Sudaryanto Y., which appeared in *Bioresource Technology* in 2006 and has been cited 364 times, has the most citations. Ting H.'s essay on tour management, which was published in 2019, gets the highest score when measured in terms of citations per year, averaging 13.80. The article by Ting H. also performs admirably in terms of normalized citations, with a score of 6.62.

Table 4. Most global cited documents.

Title	Author(s)	Year	Total Citations	TC per Year	Normalized TC
High surface area activated carbon prepared from cassava peel by chemical activation (26)	Sudaryanto Y, Hartono SB, Irawaty W,	2006	364	20.22	1.00

Food consumption patterns and nutrition transition in South-East Asia (27)	Hindarso H, Ismadji S Lipoeto NI, Geok Lin K, Angeles-Agdeppa I	2013	89	8.09	3.18
Ethnic food consumption intention at the touring destination: The national and regional perspectives using multi-group analysis (28)	Ting H, Fam KS, Jun Hwa JC, Richard JE, Xing N	2019	69	13.80	6.62
Traditional food traders in developing countries and competition from supermarkets: Evidence from Indonesia (29)	Suryadarma D, Poesoro A, Akhmadi, Budiyati S, Rosfadhila M, Suryahadi A	2010	49	3.50	1.00
Urbanisation, dietary change and traditional food practices in Indonesia: A longitudinal analysis (30)	Colozza D, Avendano M	2019	33	6.60	3.17
Consumer perception of original and modernised traditional foods of Indonesia (31)	Fibri DLN, Frøst MB	2019	32	6.40	3.07
Healthy food traditions of Asia: Exploratory case studies from Indonesia, Thailand, Malaysia, and Nepal (32)	Harmayani E, Anal AK, Wichienchot S, Bhat R, Gardjito M, Santoso U	2019	30	6.00	2.88
Seeking environmental causes of neurodegenerative disease and envisioning primary prevention (33)	Spencer PS, Palmer VS, Kisby GE	2016	27	3.38	3.29
Isolation of potential probiotic <i>Lactobacillus rhamnosus</i> strains from traditional fermented mare milk produced in Sumbawa Island of Indonesia (34)	Shi T, Nishiyama K, Nakamata K, Aryantini NPD, Mikumo D, Oda Y	2012	27	2.25	1.00
Exploring loyalty to specialty foods among tourists and residents (35)	Suhartanto D, Chen BT, Mohi Z, Sosianika A	2018	24	4.00	2.58

There are 89 citations for other works, with an average of 8.09 citations per year and a normalized citation of 3.18, such as the work by Lipoeto N.I., which was published in Public Health Nutrition in 2013. According to the number of citations and the normalized value of citations per year, other publications by authors such as Suryadarma D. in Food Policy, Colozza D. in Social Science & Medicine, and Fibri D.L.N. in Appetite also garnered a great deal of attention.

3.1.5. Trend Topics

The findings of this research, as illustrated in Figure 2, reveal "Indonesia" as the most frequently mentioned keyword, appearing 45 times. Studies have often documented the diversity of traditional Indonesian cuisines and the influence of modernization on culinary practices. For instance, Syamsuardi et al. (36) explored the traditional foods of the Aneuk Jamee community in Aceh, while Suryadarma et al. (2010) investigated the impact of supermarket competition on traditional food systems.

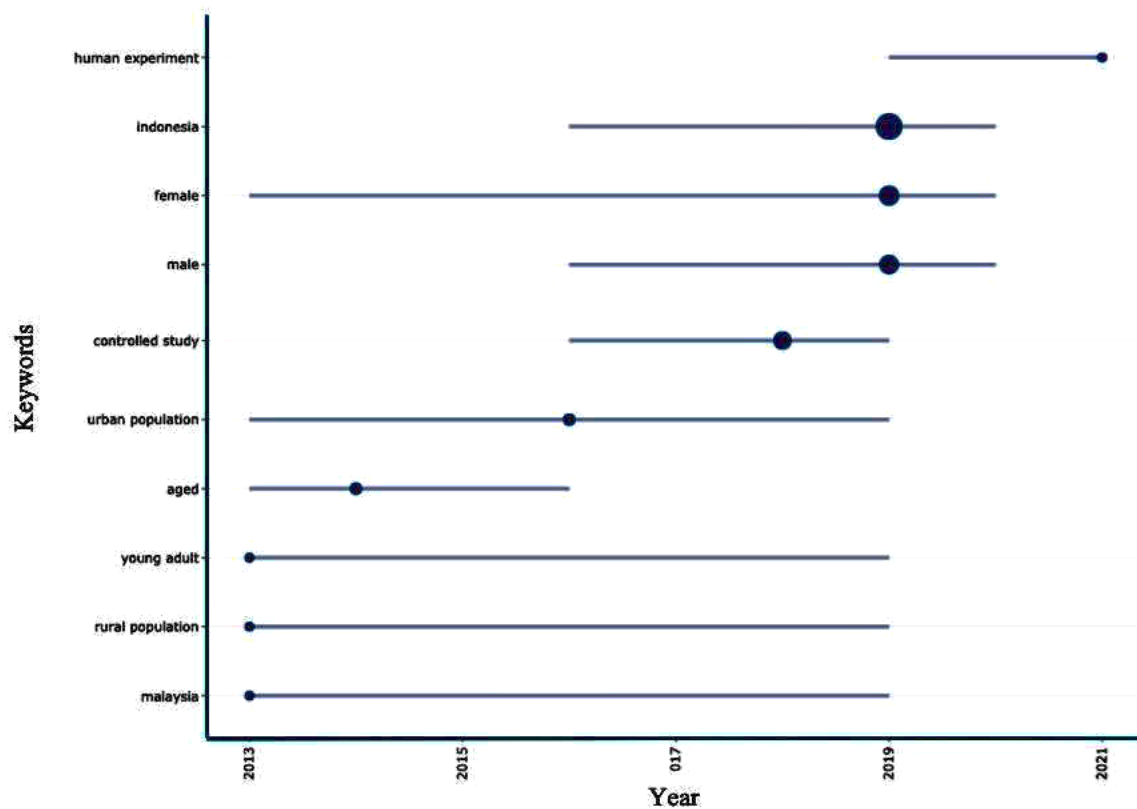


Figure 2. Trend topics.

Gender-specific themes also feature prominently, with "female" (20 mentions) and "male" (18 mentions) underscoring an increased focus on how gender shapes food preferences and consumption behaviors. Research highlights the role of women as custodians of culinary traditions, such as preserving traditional beverage recipes in the Sasak community (37) or their preferences for modernized traditional foods (31). Similarly, studies on men have examined differences in food preferences, such as their perception of traditional foods and fast food within both local and global contexts (38).

Age-specific dietary behaviors are also a growing area of interest, reflected in the keywords "young adult" and "aged" (5–6 mentions). Research has focused on young adults' preferences for traditional foods compared to modern options and their perceptions of traditional foods in contemporary lifestyles (31). Studies on older populations, such as Colozza and Avendano (30), examine how urbanization impacts dietary changes among older adults, often contrasting them with younger generations.

Geographically, "rural population" (5 mentions) and "urban population" (6 mentions) highlight a focus on the contrasts between rural traditional practices and urbanized diets. Urban populations often experience shifts toward convenience foods due to modernization, as explored by Colozza and Avendano(30) and Suhartanto et al. (35). In contrast, rural communities have been studied for their efforts to preserve traditional culinary practices, such as the trade of traditional food plants in Kranggan Mas markets (39) and the impacts of modernization on rural dietary habits (29).

The inclusion of "Malaysia" (five mentions) reflects a regional perspective, emphasizing shared cultural and culinary practices between Indonesia and neighboring countries. Comparative studies, such as those by Harmayani et al. (32), have explored traditional food systems across Indonesia, Malaysia, and other Southeast Asian nations, highlighting their commonalities and distinctions. Additionally, Suryadarma et al. (29) examine traditional food traders' challenges and their competition with supermarkets in both Indonesia and Malaysia.

These findings illustrate a broadening scope of research that integrates cultural, demographic, and geographic dimensions, aligning with global trends in dietary studies and urbanization's impact on food practices in Southeast Asia. The expanding field underscores the importance of preserving traditional culinary practices amid modern transformations while exploring their relevance in contemporary and regional contexts.

3.1.6. Co-occurrence Network

The co-occurrence network analysis uncovers interactions between various topics in the study of Indonesian ethnic food, as illustrated in Figure 3. These clusters collectively illustrate the diversity of research on Indonesian ethnic food, spanning topics from urbanization and health benefits to demographic preferences and international comparisons. The findings highlight the complex interplay of cultural, economic, and scientific dimensions in understanding and preserving traditional food practices in an evolving global context.

This analysis revealed four main clusters, each representing interrelated themes within the context of ethnic food research. The first cluster highlights terms such as "Indonesia" and "food", along with topics closely associated with traditional food, such as "traditional food", "urbanization", "food intake", and "coconut milk." This cluster reflects a research focus on the impact of urbanization on traditional culinary practices and dietary shifts. Studies in this cluster often explore how traditional foods are preserved or adapted for modern urban lifestyles. For example, Colozza and Avendano (30) conducted a longitudinal analysis showing that urbanization has prompted shifts from traditional to more convenient modern foods. Similarly, Suryadarma et al. (29) examined how competition with supermarkets impacts traditional food systems, while Fibri and Frøst (31) explored consumer perceptions of original and modernized traditional foods.

3.1.7. Thematic Evolution

Figure 4 depicts how the focus of the study of ethnic food in Indonesia has shifted over time, as revealed by the thematic evolution analysis. These shifts illustrate how the study of ethnic food in Indonesia has evolved from foundational cultural research to a more diversified and methodologically sophisticated field that addresses contemporary challenges and opportunities in health, commerce, and cultural preservation.

From 1993 to 2017, the majority of research centered on 'culture,' 'food,' and 'Indonesia' as the primary topics. During this period, research primarily focused on documenting traditional foods and their cultural significance. The central themes revolved around culture, food traditions, and local markets, with an emphasis on preserving traditional culinary practices and understanding their roles in identity and heritage. Initial explorations into the health benefits of traditional foods also began, but the focus remained largely descriptive and culturally oriented. For instance, Suryadarma et al. (29,32) studied the competition between traditional food traders and supermarkets, reflecting early concerns about modernization's impact on traditional systems. Similarly, Harmayani et al. (32) explored traditional food practices across Southeast Asia, emphasizing shared cultural values, while Colozza and Avendano (30) highlighted dietary transitions due to urbanization, signaling a growing interest in modernization's effects.

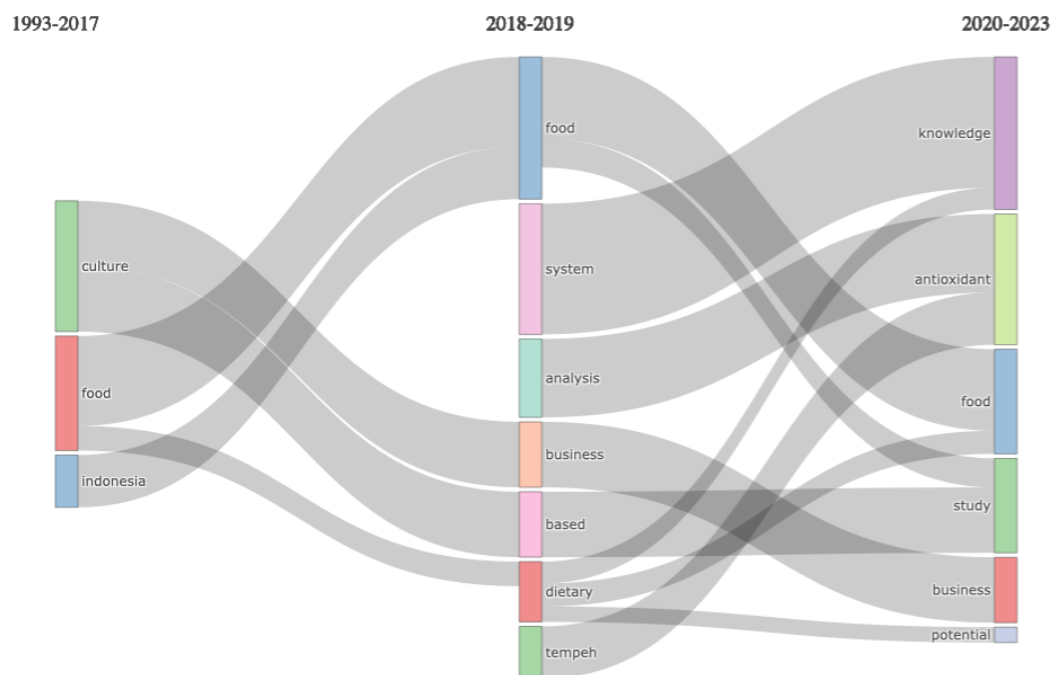


Figure 4. Thematic evolution.

Between 2018 and 2019, research expanded into new areas, such as "business," "nutrition," and "analysis." This period saw a diversification of research topics, with studies exploring traditional foods in the context of modern commerce and health, integrating cultural aspects with economic and nutritional analysis. The role of consumer preferences and loyalty emerged as significant focuses, reflecting a shift from purely cultural studies to more practical and applied research. This marked the integration of traditional foods into broader socio-economic contexts, such as tourism and modernization. For example, Fibri and

Frøst (31) investigated consumer perceptions of traditional and modernized foods, bridging cultural preservation with modern marketing strategies. Suhartanto et al. (35) explored loyalty to specialty foods, reflecting a commercial dimension to traditional food studies, while Wulandari et al. (38) examined young Indonesians' dietary preferences, highlighting generational shifts in food consumption patterns.

From 2020 to 2023, the focus shifted further to include terms like 'antioxidant,' 'study,' and 'knowledge.' This period saw a significant emphasis on the nutritional and health benefits of traditional foods, particularly in exploring antioxidant properties, probiotic potential, and methodological rigor. Researchers increasingly utilized modern research methodologies, including laboratory-based studies and controlled experiments, to validate traditional food practices. This reflects a broader trend toward connecting traditional foods with global health and wellness trends. For instance, Shi et al. (34) identified probiotic strains in fermented traditional foods, linking traditional practices to modern health science. Similarly, Harmayani et al. (32) investigated the antioxidant properties of traditional foods, aligning with global interest in functional foods, and Vetter et al. (41) highlighted the neglect of traditional food value chains in modern supermarket-led economies, blending health, culture, and commerce.

3.1.8. Collaboration

Figure 5's analysis of global collaboration in the study of ethnic food in Indonesia demonstrates that Indonesia has successfully established research partnerships with numerous nations. Among these, Malaysia, with a total of six collaborations, has the highest collaboration frequency with Indonesia. Other notable partners include Japan and China, which have contributed significantly to collaborative research efforts. These partnerships highlight Indonesia's success in fostering international research connections in the field of ethnic culinary studies.

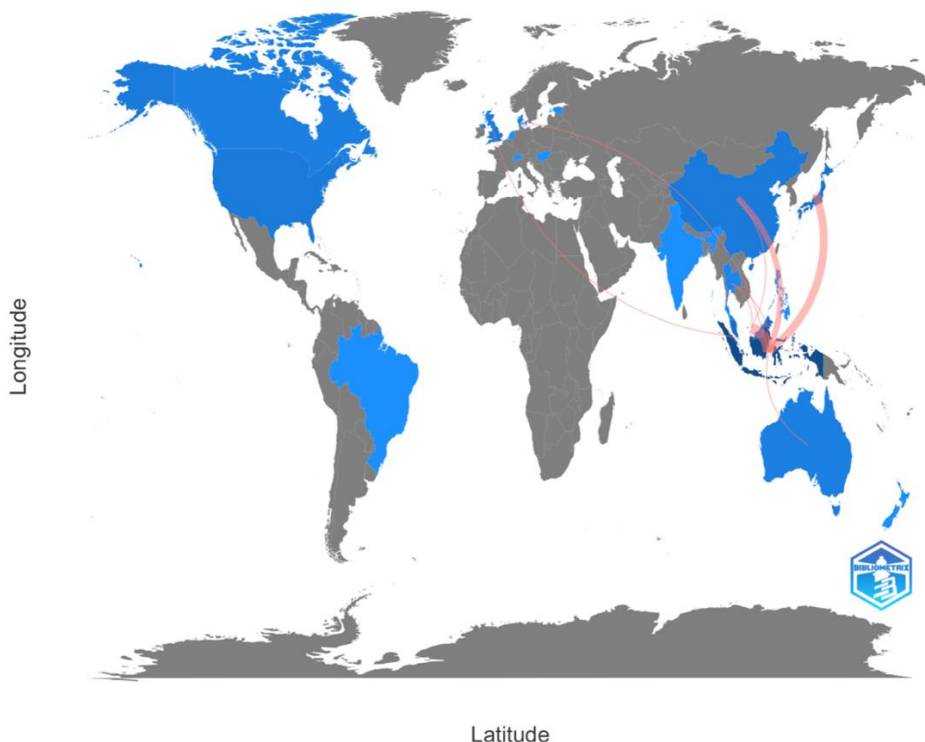


Figure 5. Collaboration worldmap.

Collaboration often involves comparative studies of food traditions. For example, Harmayani et al. (32) explored food traditions across Southeast Asia, including Indonesia, Malaysia, Thailand, and Nepal. Their findings emphasized both the shared cultural significance and the diversity of traditional practices within the region. Other collaborative studies focus on probiotic and nutritional research. Shi et al. (34), in collaboration with Japanese researchers, investigated the probiotic potential of traditional fermented mare milk from Indonesia. Their study identified strains of *Lactobacillus rhamnosus* with significant health benefits, contributing to the broader application of traditional foods in modern health science. This type of collaboration reflects a growing scientific interest in connecting traditional food practices with contemporary nutritional research.

Consumer behavior is another key area of collaborative research. Fibri and Frøst (31) worked with Danish scholars to examine perceptions of traditional and modernized Indonesian foods. Their findings highlighted generational and cultural differences in food preferences, emphasizing the importance of balancing modernization with cultural heritage in food marketing. Similarly, Suhartanto et al. (35), in collaboration with researchers from Taiwan and Malaysia, explored loyalty to Indonesian specialty foods among tourists and residents, demonstrating the potential for traditional foods to thrive in both local and international markets.

In recent years, research has expanded to antioxidant and functional food studies. Harmayani et al. (32) collaborated with researchers from Indonesia, Thailand, Malaysia, and Nepal to evaluate the antioxidant properties of traditional Indonesian foods, showcasing their health benefits and potential for modern functional food development. This collaboration aligns with the global trend of leveraging traditional foods for health and wellness purposes, emphasizing their relevance in the global market. Lastly, collaborations have explored global influences on local food practices. Wulandari et al. (38) studied the impact of Western fast food on Indonesian culinary traditions. Their findings highlighted generational shifts in dietary preferences, particularly among young Indonesians, raising concerns about the erosion of traditional food practices in the face of globalization.

These collaborations demonstrate the diversity and richness of Indonesian ethnic foods as a field of study. Whether through comparative research, scientific exploration, or studies on global influences, Indonesia's collaborative networks underscore their vital role in preserving and advancing the understanding of ethnic culinary traditions on a global scale.

3.2. Discussion

Trends in the study of ethnic food in Indonesia shed light on areas of concentration and transitions that have occurred over time. The topic "Indonesia" dominates this research, indicating that the study of Indonesian ethnic food has become increasingly popular and relevant since 2016 (31,32,42,43). The term "Indonesia" appears 45 times in the related literature. This is consistent with previous studies which also highlights the expansion of ethnic food research in Indonesia (41,44,45).

This study also found the use of "female" and "male" 20 and 18 times, respectively, suggests that gender has become an essential factor in the study of Indonesian ethnic food. This study is consistent with prior research demonstrating gender differences in food consumption (46–48). Studies that rely on "controlled studies" also show an increase, with up to a 15-fold increase in frequency, indicating a trend toward more controlled methodologies

in research (49–51). This indicates increasing methodological rigor in Indonesian research on ethnic foods.

The topics spanning geographical and demographic coverage, such as "Malaysia", "rural population", "young adult", "aged", and "urban population", demonstrate that the focus of this research varies. This demonstrates that research on ethnic food in Indonesia is not limited to the local context alone, but also includes international comparisons and differences in food consumption based on demographic factors (32,52–54).

From 2018 to 2019, research expanded to include 'business,' 'diet,' and 'analysis' as new topics, with 'local' topics also emerging as significant research areas. This may reflect a transition in the focus of research from ethnic food as a cultural object to the economic and health values of local food (52,55). This suggests a greater focus on the economic potential of ethnic foods and their contribution to healthy, sustainable diets.

This analysis also demonstrates that ethnic food in Indonesia has become a significant research topic that has garnered international interest. In fact, the diversity and uniqueness of Indonesian ethnic foods, combined with their significance in cultural, social, and economic contexts, make Indonesian ethnic foods a valuable research topic (31,32,41,56). Consequently, there are ample opportunities for further research and international collaboration in this field.

4. Conclusions

This study explores the evolution and growth of ethnic food research in Indonesia over a thirty-year span (1993–2023) through bibliometric analysis. First, research on ethnic food in Indonesia has grown substantially, with an average annual increase of approximately 6.7%. This growth reflects rising scholarly interest in Indonesia's rich culinary heritage and increasing recognition of its relevance in both local and global contexts. Additionally, the study revealed a high level of collaboration among researchers, with most studies being team-based and featuring significant international partnerships.

Second, the focus of ethnic food research in Indonesia has evolved over time. Initially centered on cultural and regional dimensions, recent studies have increasingly emphasized scientific and nutritional aspects, including health benefits, functional food development, and modernized food practices. This shift demonstrates changing perceptions and attitudes toward ethnic food, highlighting its potential to address contemporary issues, such as global health trends and sustainable food systems.

Third, this analysis underscores the international appeal of Indonesian ethnic foods. Researchers from diverse countries, including Malaysia, Japan, China, and Canada, have collaborated with Indonesian scholars to reflect the global importance of this field. These collaborations have enriched the research landscape, fostering a cross-cultural understanding and enhancing the scientific rigor of studies on Indonesian ethnic foods.

However, this study had certain limitations. The analysis focuses solely on journal-published research, potentially excluding relevant studies from other sources, such as conference proceedings or book chapters. Additionally, restricting the analysis to English-language documents may have overlooked valuable research published in other languages. Future research should address these limitations by incorporating a broader range of publication types and multilingual sources. Interdisciplinary studies that examine ethnic food from diverse perspectives—such as cultural preservation, sustainability, and global health—are highly encouraged. Moreover, given the extensive international collaborations in this

field, there are significant opportunities to expand cross-national research, exploring shared challenges and solutions in the study of ethnic foods worldwide.

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Author Contributions

F.R.W, as the team leader, conceptualized the study, designed the research framework, and supervised its progress. She played a key role in interpreting the results, securing research funding, and leading the writing and revision processes to ensure a clear and cohesive manuscript. A.N managed data collection and cleaning, ensuring the quality of the study data. She led the data analysis and collaborated with F.R.W on interpreting the findings. A.N also documented the research methodology and provided feedback on manuscript drafts. A.D.S conducted the literature review, contextualized the findings within existing research, and authored the discussion and conclusion sections, highlighting the study's broader implications.

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Institutional Review Board Statement

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

Authors may declare no conflict of interest

References

1. Hartanto D. Representasi Penguatan Identitas Budaya pada Mahasiswa Melalui Pendidikan Sosial Budaya di STKIP Al Maksum Langkat. *Jurnal Berbasis Sosial*. 2022;2(1):69–79.
2. Utami S. Kuliner sebagai identitas budaya: Perspektif komunikasi lintas budaya. *CoverAge: Journal of Strategic Communication*. 2018;8(2):36–44.
3. Wibisono A, Wisesa HA, Rahmadhani ZP, Fahira PK, Mursanto P, Jatmiko W. Traditional food knowledge of Indonesia: a new high-quality food dataset and automatic recognition system. *Journal of Big Data*. 2020;7:1–19.
4. Wargadalem FR, Wasino, Yulifar L. Pempek Palembang: history, food making tradition, and ethnic identity. *Journal of Ethnic Foods*. 2023;10(1):45.
5. Wijaya S. Indonesian food culture mapping: a starter contribution to promote Indonesian culinary tourism. *Journal of Ethnic Foods*. 2019;6(1):1–10.

6. Mardatillah A, Raharja SJ, Hermanto B, Herawaty T. Riau Malay food culture in Pekanbaru, Riau Indonesia: commodification, authenticity, and sustainability in a global business era. *Journal of Ethnic Foods*. 2019;6:1–10.
7. Surono IS. Ethnic fermented foods and beverages of Indonesia. *Ethnic fermented foods and alcoholic beverages of Asia*. 2016;341–82.
8. Arsil P, Dang H Le, Wicaksono R, Hardanto A. Determinants of consumers' motivation towards ethnic food: evidence from Indonesia. *British Food Journal*. 2022;124(10):3183–200.
9. Herminingrum S. The genealogy of traditional Javanese cassava-based foods. *Journal of Ethnic Foods*. 2019;6(1):15.
10. Yudhistira B. The development and quality of jackfruit-based ethnic food, gudeg, from Indonesia. *Journal of Ethnic Foods*. 2022;9(1):19.
11. Harmayani E, Anal AK, Wichienchot S, Bhat R, Gardjito M, Santoso U, et al. Healthy food traditions of Asia: exploratory case studies from Indonesia, Thailand, Malaysia, and Nepal. *Journal of Ethnic Foods*. 2019;6(1):1–18.
12. Kwik JC. *Traditional food knowledge: Renewing culture and restoring health*. University of Waterloo; 2008.
13. Palupi S, Abdillah F. Local Cuisine as a Tourism Signature: Indonesian Culinary Ecosystem. In: *Delivering Tourism Intelligence: From Analysis to Action*. Emerald Publishing Limited; 2019. p. 299–312.
14. Lipoeto NI, Agus Z, Oenzil F, Masrul M, Wattanapenpaiboon N, Wahlqvist ML. Contemporary minangkabau food culture in West Sumatra, Indonesia. *Asia Pacific journal of clinical nutrition*. 2001;10(1):10–6.
15. Colozza D, Avendano M. Urbanisation, dietary change and traditional food practices in Indonesia: A longitudinal analysis. *Social Science & Medicine*. 2019;233:103–12.
16. Fibri DLN, Frøst MB. Consumer perception of original and modernised traditional foods of Indonesia. *Appetite*. 2019;133:61–9.
17. Silalahi M, Wakhidah AZ. The food plants trade in the Kranggan Mas traditional market, West Java Province, Indonesia: food security and local cuisine. *Journal of Ethnic Foods*. 2023;10(1).
18. Tamba KH, Pratama IS, Rakhmadi R. Gastrodiplomasi dan Identitas Nasional: Studi Thailand, Vietnam, dan Singapura. *Jurnal Terekam Jejak*. 2024;2(2):1–16.
19. Haryanto B, Purwanto D, Dewi AS, Cahyono E. How does the type of product moderate consumers' buying intentions towards traditional foods?(Study of consumer behavior in Indonesia). *Journal of Asia Business Studies*. 2019;13(4):525–42.
20. Trichopoulou A. Diversity v. globalization: traditional foods at the epicentre. *Public Health Nutrition*. 2012;15(6):951–4.
21. Wilhelmina Q, Joost J, George E, Guido R. Globalization vs. localization: global food challenges and local solutions. *International Journal of Consumer Studies*. 2010;34(3):357–66.
22. Oh SH, Park KW, Daily III JW, Lee YE. Preserving the legacy of healthy Korean food. Vol. 17, *Journal of Medicinal Food*. Mary Ann Liebert, Inc. 140 Huguenot Street, 3rd Floor New Rochelle, NY 10801 USA; 2014. p. 1–5.
23. Florek M, Gazda J. Traditional food products—Between place marketing, economic importance and sustainable development. *Sustainability*. 2021;13(3):1277.

24. Cooper HM. Synthesizing research : a guide for literature reviews. Sage Publications; 1998. 201 p.
25. Aria M, Cuccurullo C. bibliometrix : An R-tool for comprehensive science mapping analysis. *J Informetr.* 2017 Nov;11(4):959–75.
26. Sudaryanto Y, Hartono SB, Irawaty W, Hindarso H, Ismadji S. High surface area activated carbon prepared from cassava peel by chemical activation. *Bioresour Technol* [Internet]. 2006;97(5):734–9. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-29144460055&doi=10.1016%2fj.biortech.2005.04.029&partnerID=40&md5=2b3ea32b2355dd1a8b7d1fcc8447be02>
27. Lipoeto NI, Geok Lin K, Angeles-Agdeppa I. Food consumption patterns and nutrition transition in South-East Asia. *Public Health Nutr* [Internet]. 2013;16(9):1637–43. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-84881102629&doi=10.1017%2fS1368980012004569&partnerID=40&md5=b286f6c7930864acfc93a58fe56d8b27>
28. Ting H, Fam KS, Jun Hwa JC, Richard JE, Xing N. Ethnic food consumption intention at the touring destination: The national and regional perspectives using multi-group analysis. *Tour Manag* [Internet]. 2019;71:518–29. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85056617758&doi=10.1016%2fj.tourman.2018.11.001&partnerID=40&md5=7112eae120c78986955a8a05157f5bca>
29. Suryadarma D, Poesoro A, Akhmadi, Budiayati S, Rosfadhila M, Suryahadi A. Traditional food traders in developing countries and competition from supermarkets: Evidence from Indonesia. *Food Policy* [Internet]. 2010;35(1):79–86. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-74149094432&doi=10.1016%2fj.foodpol.2009.11.002&partnerID=40&md5=aed8679ff7703fa9c2cee23fa1190835>
30. Colozza D, Avendano M. Urbanisation, dietary change and traditional food practices in Indonesia: A longitudinal analysis. *Soc Sci Med.* 2019;233.
31. Fibri DLN, Frøst MB. Consumer perception of original and modernised traditional foods of Indonesia. *Appetite.* 2019;133.
32. Harmayani E, Anal AK, Wichienchot S, Bhat R, Gardjito M, Santoso U, et al. Healthy food traditions of Asia: Exploratory case studies from Indonesia, Thailand, Malaysia, and Nepal. *Journal of Ethnic Foods.* 2019;6(1).
33. Spencer PS, Palmer VS, Kisby GE. Seeking environmental causes of neurodegenerative disease and envisioning primary prevention. *Neurotoxicology.* 2016;56.
34. Shi T, Nishiyama K, Nakamata K, Aryantini NPD, Mikumo D, Oda Y, et al. Isolation of potential probiotic *Lactobacillus rhamnosus* strains from traditional fermented mare milk produced in Sumbawa Island of Indonesia. *Biosci Biotechnol Biochem.* 2012;76(10).
35. Suhartanto D, Chen BT, Mohi Z, Sosianika A. Exploring loyalty to specialty foods among tourists and residents. *British Food Journal* [Internet]. 2018;120(5):1120–31. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85046844172&doi=10.1108%2fBFJ-09-2017-0485&partnerID=40&md5=ddefc29327aa75986626a49dd2ff56d4>

36. Syamsuardi, Nurainas, Taufiq A, Harmawan T, Suwardi AB. Aneuk Jamee traditional foods in the South Aceh District, Indonesia. *Biodiversitas* [Internet]. 2022;23(1):443 – 454. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85123530156&doi=10.13057%2fbiodiv%2fd230146&partnerID=40&md5=112a6e089ab9285b2b9f71a123b6e228>
37. Sukenti K, Hakim L, Indriyani S, Purwanto Y. Ethnobotany of sasak traditional beverages as functional foods. *Indian Journal of Traditional Knowledge* [Internet]. 2019;18(4):775 – 780. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85073327075&partnerID=40&md5=0d607a455ef89ca525a44222d88a9d0f>
38. Wulandari R, Suryaningsih S, Zamzami MI, Pratama R. Perception of Indonesian young generation on javanese coastal culinary tradition and american fast food. *Adv Sci Lett* [Internet]. 2017;23(10):9993–5. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85039444203&doi=10.1166%2fasl.2017.10364&partnerID=40&md5=1080c247e7bffb22a1338447ddaf65c8>
39. Silalahi M, Wakhidah AZ. The food plants trade in the Kranggan Mas traditional market, West Java Province, Indonesia: food security and local cuisine. *Journal of Ethnic Foods* [Internet]. 2023;10(1). Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85167329637&doi=10.1186%2fs42779-023-00192-5&partnerID=40&md5=4ab9d292fb6afe50eb354731bd96d97f>
40. Rukayadi Y, Lau KY, Zainin NS, Zakaria M, Abas F. Screening antimicrobial activity of tropical edible medicinal plant extracts against five standard microorganisms for natural food preservative. *Int Food Res J* [Internet]. 2013;20(5):2905 – 2910. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-84887539133&partnerID=40&md5=a05e0a27503870dc28f47e9277e4248c>
41. Vetter T, Larsen MN, Bruun TB. Supermarket-led development and the neglect of traditional food value chains: Reflections on Indonesia’s agri-food system transformation. *Sustainability (Switzerland)*. 2019;11(2).
42. Wijaya S. Indonesian food culture mapping: A starter contribution to promote Indonesian culinary tourism [Internet]. Vol. 6, *Journal of Ethnic Foods*. BioMed Central Ltd.; 2019 [cited 2020 May 7]. p. 9. Available from: <https://journalofethnicfoods.biomedcentral.com/articles/10.1186/s42779-019-0009-3>
43. Yulianis N, Sarastuti, Risfaheri, Rachman B. The implementation and synergy of Indonesian national food reserves. In: T. S, A. S, M. A, S.M. P, D. C, R. R, editors. 1st International Conference on Agriculture, Natural Resources, and Rural Development, ICANaRD 2021 [Internet]. Indonesian Agency for Food Security, Jln. Harsono RM No. 3, Jakarta, Indonesia: IOP Publishing Ltd; 2021. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85120580879&doi=10.1088%2F1755-1315%2F892%2F1%2F012054&partnerID=40&md5=6f936ae18022379482e3f85f7c5fd8bb>
44. Wibisono A, Wisesa HA, Rahmadhani ZP, Fahira PK, Mursanto P, Jatmiko W. Traditional food knowledge of Indonesia: a new high-quality food dataset and automatic recognition system. *J Big Data*. 2020;7(1).

45. Haryanto B, Purwanto D, Dewi AS, Cahyono E. How does the type of product moderate consumers' buying intentions towards traditional foods? (Study of consumer behavior in Indonesia). *Journal of Asia Business Studies* [Internet]. 2019;13(4):525–42. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85076162782&doi=10.1108%2fJABS-10-2018-0299&partnerID=40&md5=ef65f0a3650192904480d90dc8fc68b3>
46. Hanemaayer R, Anderson K, Haines J, Lickers KRL, Xavier AL, Gordon K, et al. Exploring the perceptions of and experiences with traditional foods among first nations female youth: A participatory photovoice study. *Int J Environ Res Public Health*. 2020;17(7).
47. Kawasaki Y, Akamatsu R, Fujiwara Y, Omori M, Sugawara M, Yamazaki Y, et al. Is mindful eating sustainable and healthy? A focus on nutritional intake, food consumption, and plant-based dietary patterns among lean and normal-weight female university students in Japan. *Eating and Weight Disorders* [Internet]. 2021;26(7):2183–99. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85099279705&doi=10.1007%2Fs40519-020-01093-1&partnerID=40&md5=b012f0318c07b8a08d8a0fc5c148f803>
48. Matsuo M. Preference of female students for “tempe” preparations composed of glandless cottonseed and defatted soybean or corn at various ratios. *J Nutr Sci Vitaminol (Tokyo)* [Internet]. 2000;46(4):210–3. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-0033771773&doi=10.3177%2fjnsv.46.210&partnerID=40&md5=cc6d9c67d442e9ad93f1dc1bcc113de>
49. Utami HD. Factors influencing consumer purchasing decision toward Malang meatballs at East Java, Indonesia. *Journal of Food Products Marketing* [Internet]. 2011;17(1):25–45. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-78650731619&doi=10.1080%2f10454446.2011.532375&partnerID=40&md5=6da5d06fb4db05db5b33e3faa77eabc8>
50. Rukayadi Y, Lau KY, Zainin NS, Zakaria M, Abas F. Screening antimicrobial activity of tropical edible medicinal plant extracts against five standard microorganisms for natural food preservative. *Int Food Res J* [Internet]. 2013;20(5):2905–10. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-84887539133&partnerID=40&md5=a05e0a27503870dc28f47e9277e4248c>
51. Astuti DI, Noviana Z. Optimization of fermented tofu with high isoflavone content through variation of inoculum percentages and ratios of *Lactobacillus plantarum*, *Lactobacillus acidophilus*, and *Leuconostoc mesenteroides*. *Journal of Mathematical and Fundamental Sciences* [Internet]. 2014;45(3):263–73. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-84900326081&doi=10.5614%2fj.math.fund.sci.2013.45.3.5&partnerID=40&md5=dc715b600b5424293d5bc9dcc2f551a5>
52. Mardatillah A, Raharja SJ, Hermanto B, Herawaty T. Riau Malay food culture in Pekanbaru, Riau Indonesia: Commodification, authenticity, and sustainability in a global business era. *Journal of Ethnic Foods* [Internet]. 2019;6(1). Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85078426057&doi=10.1186%2fs42779-019-0005-7&partnerID=40&md5=f6d7554d72883f81f564e4db60d7dfe0>

53. Shamsudin MN, Yodfiatfinda, Radam A, Yusop Z. Partial productivity and technical efficiency of small and medium enterprises in the Malaysian food processing industry. *Pertanika Journal of Social Sciences and Humanities* [Internet]. 2013;21(August):17–30. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-84943274549&partnerID=40&md5=879f1037a8c8fda9f0b93afd39eb072c>
54. Moy FM, Alias AA, Jani R, Abdul Halim H, Low WY. Determinants of self-reported food safety practices among youths: A cross-sectional online study in Kuala Lumpur, Malaysia. *British Food Journal*. 2018;120(4):891–900.
55. Matondang SA, Rahma S, Haramain T. The online culinary business of ethnic food of North Sumatra. *International Journal of Advanced Science and Technology* [Internet]. 2020;29(6 Special Issue):692–701. Available from: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85083569863&partnerID=40&md5=fdb0ef8e7afa33252d466e08abc04db6>
56. Nurmufida M, Wangrimen GH, Reinalta R, Leonardi K. Rendang: The treasure of Minangkabau. Vol. 4, *Journal of Ethnic Foods*. Elsevier B.V.; 2017. p. 232–5.