



REVIEW ARTICLE

Functional and Novel Foods

Gastronomic heritage of legume foods in Southern Mediterranean cuisine

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ABSTRACT

Background: Legumes hold a prominent position among the foundational ingredients of Southern Mediterranean cuisine. **Aims:** This comprehensive review offers an exploration into the significance of traditional legume-based foods within this culinary landscape, focusing on their cultural significance, nutritional value, and extensive array of dishes. **Methods:** This study conducted a comprehensive review of traditional legume-based foods in Middle Eastern and North African cuisines by accessing scholarly databases like PubMed, Scopus, and Web of Science, and consulting grey literature from international organizations and government agencies. The search strategy combined keywords and controlled vocabulary terms to identify relevant publications in English or Arabic from January 2000 to May 2024, focusing on traditional recipes, cooking methods, nutritional profiles, cultural significance, and historical contexts. **Results:** Central to these culinary traditions are legumes such as chickpeas, lentils, and fava beans, renowned for their richness in proteins, fibers, and essential micronutrients. The review catalogs 34 traditional dishes from the Southern Mediterranean region including Tunisia, Egypt, Morocco, Algeria, Syria, Palestine, and Lebanon. These dishes exemplify the region's remarkable culinary diversity, where each dish represents a narrative thread of regional cuisine. **Conclusion:** It is also important to acknowledge the commercialization of traditional legume-based dishes is driven by globalization trends and the rising demand for convenient and culturally diverse food options worldwide. As such, educational and culinary initiatives play a pivotal role in preserving and promoting these culinary practices. For future research actions, there is a need to evaluate these traditional dishes' nutritional quality, and sustainability and explore consumer perceptions.

Keywords: Chickpeas, Lentils, Faba, Peas, Ethnic Food, Nutritional Quality, Versatility, Traditional Cuisine, Levant, North Africa.

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1 Introduction

Legumes have emerged as a cornerstone of traditional diets across various cultures. Domesticated during the Neolithic period, legumes have been cultivated across various civilizations and epochs (Capasso et al., 2024; Huebbe & Rimbach, 2020). This versatile family, including beans, lentils, chickpeas, and peas, has long been recognized for their nutritional value, affordability, and sustainability. Today, the Leguminosae family comprises over 19,000 extant species (Ambika et al., 2022). In the Southern Mediterranean region, legumes have been integral to the region's culinary heritage and cultural identity, shaping traditional dishes and culinary traditions (Ambika et al., 2022). Particularly, chickpeas, lentils, and faba beans form the foundation of many traditional dishes (Guerra-Garcia et

al., 2022; Othmani & Wadie, 2021). Their availability, versatility, affordability, taste, and nutritional value have made them indispensable ingredients (Boukid et al., 2019). Historically, legumes have served as a staple food source, providing essential nutrients and sustenance to communities across the Mediterranean basin (Ferreira et al., 2021; Ofoedu et al., 2022).

Despite their historical importance, legumes experienced a period of relative obscurity in modern diets, overshadowed by the rise of processed foods and animal-based proteins (Boukid et al., 2019). However, increased awareness of the environmental and health benefits of plant-based diets has driven legumes back into the spotlight. Recognizing the role of legumes in promoting nutrition security, sustainable agriculture, and biodiversity conservation, the initiatives of

the Food and Agriculture Organization (FAO) further boosted the promotion of their cultivation and consumption worldwide (FAO, 2016).

Traditional legume-based foods are regaining recognition as a path to achieve several Sustainable Development Goals (SDGs) set by the United Nations (United Nations, 2015). These time-tested culinary practices promote No Hunger (SDG 2) by offering readily available, nutrient-rich sources of protein. They contribute to Good Health and Well-being (SDG 3) through their balanced composition and potential health benefits. Additionally, the preservation and promotion of these traditional foods safeguard cultural and natural heritage (SDG 11), ensuring the continuation of these valuable knowledge systems and practices for future generations.

North African and Middle Eastern cuisine has experienced a significant rise in popularity in Western countries over the past few decades (Dhliwayo et al., 2022; Mefleh et al., 2022). This trend could be attributed to factors such as increased immigration from Middle Eastern countries, the proliferation of Middle Eastern restaurants in urban centers, and the growing influence of social media and culinary tourism. The resurgence of interest in traditional legume-based foods was driven by a growing appreciation for their nutritional value and cultural significance (Hernández-López et al., 2022). Traditional recipes and culinary practices centered around legumes highlighted their affordability and accessibility (Boronat et al., 2023). In this light, this review aims to explore the heritage of legume-based foods in the Southern Mediterranean region, examining their historical significance, nutritional benefits, and culinary diversity.

2 Methods

This study conducted a comprehensive review of traditional legume-based foods across Middle Eastern and North African cuisines. The research methodology involved accessing scholarly databases, including PubMed, Scopus, and Web of Science, to identify relevant peer-reviewed articles, review papers, and ethnographic studies published between 2000 and 2024. Additionally, grey literature, such as reports from international organizations and government agencies, was consulted to supplement the academic literature and provide insights into culinary practices and cultural traditions within the region. The search strategy utilized a combination of keywords and controlled vocabulary terms related to legume-based dishes, Middle Eastern and North African cuisines, cultural heritage, culinary traditions, and sustainable food systems. The inclusion criteria encompassed publications written in English or Arabic that focused on traditional recipes, cooking methods, nutritional profiles, cultural significance, and historical contexts of legume-based foods prevalent in the study region. Furthermore, to ensure the

comprehensiveness of the review, reference lists of identified articles and books were manually searched for additional relevant sources.

The period of time considered for this review spanned from January 2000 to May 2024, allowing for the inclusion of recent publications and emerging research trends in the field of food studies and culinary anthropology. By adopting a systematic approach to data collection and synthesis, this study aimed to provide a comprehensive overview of traditional legume-based foods in Middle Eastern and North African cuisines, with a focus on their cultural significance, nutritional attributes, and implications for sustainable food systems.

3 Historical context of legume consumption in the Southern Mediterranean region

During the Paleozoic era, around 500 million years ago, land plants began to evolve, giving rise to various morphotypes and eventually leading to the emergence of different plant species (Servais et al., 2019). However, the evolutionary history of plants is not fully understood due to limited fossil records of plant progenitors and morphotypes. The evolution of flowering plants, or angiosperms, is believed to have occurred during the late Permian, approximately 275 million years ago (Salomo et al., 2017).

The Leguminosae family, commonly known as legumes, ranks as the third largest family among flowering plants. The divergence and evolution of legumes are subject to speculation (Ambika et al., 2022). Following the Cretaceous-Paleogene boundary (KPB), legumes emerged as ecologically dominant or co-dominant species across various vegetation types. Fossil evidence indicates that this rise in prominence coincided with the proliferation of several extensively studied animal clades, such as Placentalia and Neoaves (Koenen et al., 2021). While no legume fossils have been definitively identified before the KPB, the family's abundance and diversity are evident in the late Paleocene, coinciding with the emergence of modern-type rainforests (Herrera et al., 2019). Fossil evidence indicates the presence of stem group representatives of legume subfamilies close to the Paleocene-Eocene Thermal Maximum (PETM), approximately 58 million years ago (Herrera et al., 2019). Plant domestication is widely accepted to have commenced approximately 12,000 years ago in the Fertile Crescent (Begna, 2020). However, recent evidence suggests the domestication of some plants in Africa might have occurred slightly earlier, potentially around 15,000 years ago (Purugganan, 2019). More research is needed to solidify the exact timeline.

Chickpea (*Cicer arietinum*) was found within the late 10th millennium B.P. strata at Tell el-Kerkh, situated in northwest Syria (Tanno & Willcox, 2006). The beginnings of the cultivation of chickpeas can be traced back to early discoveries at Tell el-Kerkh in northwest Syria, dating back to the late 10th millennium B.P. (Zeder, 2011). The chickpea was first domesticated in the Fertile Crescent 10,000 years ago (Igolkina et al., 2023). Its spread or diversification in the Middle East, South Asia, Ethiopia, and the Western Mediterranean remains unclear.

Faba bean (*Vicia faba* L.) was also among the first domesticated legumes. Its presence has been documented alongside chickpeas at the same site (Zeder, 2011). The Pre-Pottery Neolithic B site of Yiftah'el, situated in the Southern Levant, is notable for its abundant findings of ancient faba bean remains, radiocarbon dated to the 10th-millennium cal. BP (Ambika et al., 2022; Caracuta et al., 2015). Notably, the large-seeded modern faba bean variety is not observed in the Near East until around AD 1000 (Zeder, 2011).

Pea (*Pisum sativum* L.) is considered one of the founding crops originating from the Near East (Muñoz et al., 2017). It is associated with two wild species: *Pisum sativum* subsp. *elatius*, which has a broad distribution primarily centered in the Mediterranean region, and *Pisum fulvum*, which is confined to the regions of Syria, Lebanon, Palestine, and Jordan (Trněný et al., 2018). It was domesticated approximately 10,000 years ago in the Mediterranean region, particularly in the Middle East.

Lentil (*Lens culinaris* Medik.) has been unearthed from archaeological sites dating back to the Neolithic period, although the exact locations of domestication remain uncertain (L. Lucas & Fuller, 2020). Pre-domestication cultivation of lentils, particularly *L. orientalis*, occurred during the Pre-Pottery Neolithic A (PPNA; 11,600–10,800 cal BP) at sites like Jerf el Ahmar (Syria) and Netiv HaGdud (Jordan Valley) (Zeder, 2011). In the subsequent Pre-Pottery Neolithic B (PPNB; 10,800–8,500 BP) period in the southern Levant, lentils were widely cultivated alongside domesticated (Liber et al., 2021; Sonnante et al., 2009).

4 Nutritional quality of the main legumes

Faba beans, chickpeas, lentils, and peas are all nutrient-rich legumes that offer numerous health benefits. They hold a significant place in the Southern Mediterranean diet due to their health-promoting properties. The data in Table 1 are relative to mature seeds, cooked, boiled, and without salt. This provides an important context for understanding the nutritional composition of the legumes in their prepared form, which is commonly consumed. It ensures that the

comparisons made among the different legumes are based on a consistent measure, allowing for an accurate assessment of their nutritional value.

Faba beans, chickpeas, lentils, and peas are relatively low in calories and fat but rich in proteins and fibers (Boukid et al., 2019; Boukid & Castellari, 2022). They are also abundant in essential minerals such as iron, magnesium, and potassium, crucial for various functions including muscle function and blood pressure regulation (Cucci et al., 2019; Moreno-Araiza et al., 2023). Moreover, they contain notable amounts of vitamins like vitamin C, acting as antioxidants and supporting immune function, and B vitamins, essential for energy production. Faba beans are particularly rich in arginine, an amino acid vital for heart health and immune function (Abdel-Aal et al., 2019; Liu et al., 2022). Chickpeas are particularly high in lysine, an essential amino acid crucial for protein synthesis and tissue repair (Boukid, 2021b). Lentils are particularly rich in isoleucine, leucine, and valine, branched-chain amino acids vital for muscle growth and repair (Marchini et al., 2021). Peas are high in lysine, threonine, and phenylalanine, essential amino acids crucial for various physiological functions (Boukid et al., 2021).

While faba beans, chickpeas, lentils, and peas are nutrient-rich legumes brimming with health benefits, they also contain some anti-nutritional factors like phytic acid and lectins (Sinković et al., 2023). These can potentially interfere with the absorption of certain minerals. These anti-nutritional factors can be significantly reduced through simple preparation methods commonly used in Southern Mediterranean cuisine (Samtija et al., 2020). Soaking legumes overnight in water, followed by boiling or stewing, effectively reduces a substantial amount of these compounds (Zanella-Díaz et al., 2014). Additionally, fermentation, a traditional practice in many Mediterranean recipes, can further decrease anti-nutritional factors while enhancing their digestibility and nutrient bioavailability (Ibrahim et al., 2002; Sathya & Siddhuraju, 2015). These culinary techniques not only preserve the nutritional integrity of legume-based dishes but also enhance their health benefits, making them an integral part of balanced diets.

5 Culinary and cultural significance of traditional legume-based foods

Traditional Middle Eastern and North African legume-based dishes were compressively examined by going through their respective origins, cultural nuances, and culinary methodologies. These dishes represent a merger of historical culinary practices, reflecting the intricate interplay between ethnic preferences, cultural habits, and socio-historical contexts within the region.

Table 1. Nutritional quality of mature seeds of faba bean, chickpea, lentil, and peas (cooked, boiled, without salt) according to the USDA database (per 100 g dry matter) *

Name	Unit	Faba bean	Chickpea	Lentil	Peas	Recommended Diet Allowances (RDAs) for adults (DeSalvo et al., 2016)
Energy	kcal	386110	412164	382116	38084	Males: 2500-3000, Females: 1800-2400
Protein	g	26.677.6	22.268.86	29.679.02	24.255.36	Males: 56, Females: 46
Total lipid (fat)	g	1.400.4	6.512.59	1.250.38	1.000.22	20-35% of total calories
Ash	g	2.840.81	2.310.92	2.730.83	4.160.92	-
Carbohydrate, by difference	g	68.7719.6	68.8427.4	66.1220.1	70.5915.6	130
Fiber, total dietary	g	18.955.4	19.107.6	25.997.9	24.895.5	Males: 38, Females: 25
Total Sugars	g	6.391.82	12.064.8	5.921.8	26.835.93	Limit added sugars to <10% of total calories
Calcium, Ca	mg	12636	123.1249	62.5019	122.1727	1000
Iron, Fe	mg	5.31.5	7.262.89	10.953.33	6.971.54	Males: 8, Females: 18
Magnesium, Mg	mg	15143	12148	11836	17639	Males: 400-420, Females: 310-320
Phosphorus, P	mg	439125	422168	592180	529117	700
Potassium, K	mg	940268	731291	1214369	1226271	4700
Sodium, Na	mg	17.545	17.597	6.582	1081.45239	1500 (AI); limit to less than 2300
Zinc, Zn	mg	3.541.01	3.841.53	4.181.27	5.381.19	Males: 11, Females: 8
Copper, Cu	mg	0.910.259	0.880.352	0.830.251	0.780.173	0.9
Manganese, Mn	mg	1.480.421	2.591.03	1.630.494	2.380.525	Males: 2.3, Females: 1.8
Selenium, Se	µg	9.122.6	9.303.7	9.212.8	8.601.9	55
Vitamin C, total ascorbic acid	mg	1.050.3	3.271.3	4.931.5	64.2514.2	Males: 90, Females: 75
Thiamin	mg	0.340.097	0.290.116	0.560.169	1.170.259	Males: 1.2, Females: 1.1
Riboflavin	mg	0.310.089	0.160.063	0.240.073	0.670.149	Males: 1.3, Females: 1.1
Niacin	mg	2.490.711	1.320.526	3.491.06	9.142.02	Males: 16, Females: 14
Pantothenic acid	mg	0.550.157	0.720.286	2.100.638	0.690.153	5
Vitamin B-6	mg	0.250.072	0.350.139	0.590.178	0.980.216	Males: 1.3-1.7, Females: 1.3-1.5
Folate, total	µg	365104	432172	595181	28563	400
Fatty acids, total saturated	g	0.2320.066	0.6760.269	0.1740.053	0.1760.039	Limit to less than 10% of total calories
SFA 14:0	g	0.0040.001	0.0100.004	0.0030.001	0.0000	-
SFA 16:0	g	0.1890.054	0.5400.215	0.1480.045	0.1580.035	-
SFA 18:0	g	0.0280.008	0.0930.037	0.0160.005	0.0180.004	-
Fatty acids, total monounsaturated	g	0.2770.079	1.4650.583	0.2110.064	0.0860.019	-
Fatty acids, total polyunsaturated	g	0.5750.164	2.9151.16	0.5760.175	0.4620.102	5-10% of total calories
PUFA 18:2	g	0.5330.152	2.7891.11	0.4510.137	0.3710.082	-
PUFA 18:3	g	0.0420.012	0.1080.043	0.1220.037	0.0860.019	-
Tryptophan	g	0.2530.072	0.2140.085	0.2660.081	NMNM	5 mg/kg body weight/day
Threonine	g	0.9470.27	0.8270.329	1.0630.323	NMNM	15 mg/kg body weight/day
Isoleucine	g	1.0740.306	0.9550.38	1.2830.39	NMNM	19 mg/kg body weight/day
Leucine	g	2.0070.572	1.5850.631	2.1510.654	NMNM	42 mg/kg body weight/day
Lysine	g	1.7050.486	1.4900.593	2.0720.63	1.4210.314	38 mg/kg body weight/day
Methionine	g	0.2180.062	0.2910.116	0.2530.077	0.3670.081	19 mg/kg body weight/day
Cystine	g	0.3400.097	0.2990.119	0.3880.118	0.1450.032	-
Phenylalanine	g	1.1260.321	1.1930.475	1.4640.445	0.8960.198	33 mg/kg body weight/day
Tyrosine	g	0.8460.241	0.5530.22	0.7930.241	0.5070.112	-

Table 1. continued

Name	Unit	Faba bean	Chickpea	Lentil	Peas	Recommended Diet Allowances (RDAs) for adults (DeSalvo et al., 2016)
Tyrosine	g	0.8460.241	0.5530.22	0.7930.241	0.5070.112	-
Valine	g	1.1860.338	0.9350.372	1.4740.448	1.0500.232	24 mg/kg body weight/day
Arginine	g	2.4630.702	2.0980.835	2.2930.697	1.9140.423	-
Histidine	g	0.6770.193	0.6130.244	0.8360.254	0.4750.105	14 mg/kg body weight/day
Alanine	g	1.0910.311	0.9550.38	1.2400.377	1.0720.237	-
Aspartic acid	g	2.9790.849	2.6131.04	3.2830.998	2.2170.49	-
Glutamic acid	g	4.5261.29	3.8941.55	4.6051.4	3.3170.733	-
Glycine	g	1.1190.319	0.9270.369	1.2070.367	0.8240.182	-
Proline	g	1.1230.32	0.9200.366	1.2400.377	0.7740.171	-
Serine	g	1.2210.348	1.1230.447	1.3680.416	0.8100.179	-

Nm: Not mentioned.

* The values presented in this table are average values obtained from the USDA National Nutrient Database for Standard Reference. It is important to note that the nutritional composition of legumes can vary depending on factors such as species, variety, agricultural practices, climate, and soil conditions

By examining the diverse array of traditional recipes (Table 2), this study aims to elucidate the intricate relationship between gastronomy and cultural identity, offering insights into the enduring culinary traditions that have shaped Middle Eastern and North African cuisines over centuries.

5.1 Tajine

The term "tajine" has a rich historical significance in Moroccan cuisine. It originated from the unique clay cooking vessel known as a "tajine," which has been used for centuries in North African and Middle Eastern cooking (Oktay & Sadıkoğlu, 2018). The traditional tajine pot consists of two parts: a shallow, circular base and a conical or dome-shaped lid. This design allows for slow, even cooking and helps to retain moisture, resulting in tender and flavorful dishes. Historically, the tajine pot served as a versatile tool for cooking various dishes, ranging from stews and soups to rice and couscous. Its origins can be traced back to Berber communities in North Africa, where it was used as a portable cooking vessel by nomadic tribes. The clay material of the tajine pot was readily available and well-suited to the harsh desert environment, making it an essential part of Berber culinary culture.

There are several variations of "Tajine". The version made with legumes holds a significant place in Moroccan cuisine, reflecting both the region's culinary traditions and the historical importance of legumes as a staple food source. This dish typically features chickpeas as a primary ingredient, although variations may include other legumes such as lentils or fava beans. Other ingredients might be added such as vegetables, aromatic spices, and sometimes meat or poultry, depending on regional variations and personal preferences (Cambero et al., 2023).

5.2 Bissara

Bissara is a Moroccan soup made primarily from dried fava beans. Bissara is typically seasoned with garlic, cumin, and paprika. Bissara, historically considered a "poor man's food" due to its association with periods of scarcity and deprivation, has undergone a remarkable transformation in recent years (J. Lucas, 2023). Bissara in Egypt is a variation of the dish found in Morocco and Tunisia. In Egypt, Bissara typically consists of mashed fava beans, cooked with olive oil, garlic, lemon juice, and various spices. It's often accompanied by bread or vegetables. To prepare Bissara in Egypt, dried fava beans are soaked overnight and then cooked until tender. The cooked beans are then mashed or pureed, creating a thick and creamy texture. In a separate pan, minced garlic is sautéed in olive oil until fragrant, then added to the mashed beans along with lemon juice, cumin, salt, and pepper. The mixture is heated gently until warmed through and the flavors have melded together.

5.3 Harira

Harira is a traditional soup that holds a special place in Moroccan culture, particularly during the month of Ramadan when it is traditionally served to break the fast (Oktay & Sadıkoğlu, 2018). The base ingredients are chickpeas, lentils, and tomatoes, as well as a blend of spices such as cinnamon, turmeric, and ginger. It often features tender pieces of lamb or beef.

5.4 Doubara

Doubara is a traditional Algerian soup made primarily from broad beans and occasionally mixed with chickpeas (Pasqualone et al., 2020). The main spices include salt, garlic, tomato sauce, coriander, cumin, lemon, oil, and paprika.

Table 2. Traditional Middle Eastern and North African dishes: origins, cultural significance, and culinary practices

Dish	Origin	Main Ingredients	Cooking Method	Ethnic preferences and cultural habits	Reference
Tajine	Morocco	Chickpeas, vegetables, spices	Slow cooking in a clay pot	Influenced by Berber culinary culture, often served during festive occasions and family gatherings.	(Oktay & Sadıkoğlu, 2018)
Bissara	Morocco	Dried fava beans, garlic, cumin	Boiling, pureeing	Historically considered a "poor man's food," often consumed during periods of scarcity.	(J. Lucas, 2023)
Harira	Morocco	Chickpeas, lentils, tomatoes	Simmering	Traditionally served to break the fast during Ramadan, symbolizing community and generosity.	(Oktay & Sadıkoğlu, 2018)
Doubara	Algeria	Broad beans, chickpeas	Simmering	Reflects Algerian culinary heritage and is often enjoyed as a comforting dish during colder months.	(Pasqualone et al., 2020)
Ghorbet Adas	Middle East	Lentils, onions, tomatoes	Simmering	Commonly consumed during the colder months, providing warmth and comfort.	(Sageer, 2017)
Couscous with legumes	North Africa	Couscous, legumes, vegetables	Steaming, stewing	Often served as a staple dish during family gatherings and celebrations.	(Boukid, 2021a)
Mujadara	Middle East	Lentils, rice, caramelized onions	Cooking with spices	Known for its simplicity and affordability, often enjoyed as a comfort food.	(Al-Jawaldeh et al., 2021; Haddad et al., 2021)
Mujadara bahiryeh	Middle East	Whole lentils, spices	Cooking	Served as a main course or side dish, offering a nutritious and satisfying meal.	(Al-Jawaldeh et al., 2021)
Lentil Kibbeh	Middle East	Lentils, bulgur, onions, spices	Shaping, baking, or frying	Reflects dietary preferences for vegetarian options, often served during Lent.	(Auman Pitts & Kaban, 2022)
Lablabi	Tunisia	Chickpeas, stale bread, spices	Cooking, blending	Enjoyed as a popular street food, providing a hearty and flavorful meal.	(Kouki et al., 1989)
Mermez	Tunisia	Lamb/beef, chickpeas, spices	Boiling, simmering	Served as a comforting dish during family gatherings and festive occasions.	(Kaak, 1983; Kouki et al., 1989)
Ful medames	Egypt	Broad beans, lemon, cumin	Boiling, seasoning	A common breakfast dish, often enjoyed with bread or other accompaniments.	(Elhusseiny et al., 2018)
Fattat Hummus	Middle East	Hummus, chickpeas, tahini	Layering, garnishing	Served as part of a meze assortment during festive occasions and celebrations.	(Al-Jawaldeh et al., 2021)
Hummus be tahina	Middle East	Chickpeas, tahini, garlic	Blending	Commonly consumed as a dip or spread, often served with flatbread or vegetables.	(Al-Jawaldeh et al., 2021)
Yakhnat Fassoulia	Middle East	White or red beans, meat, onions, garlic, and tomato paste, green beans, lamb/beef, spices	Simmering	Enjoyed as a hearty and nutritious meal, often served with rice or bread.	(Sageer, 2017)
Market Loubia	Tunisia	White beans, meat onion, tomato, spices	Boiling, cooking	Commonly consumed with bread	(Kouki et al., 1989)
Lebanese Fasolia bi lahme	Lebanon	Bean, meat, tomato, onion, spices	Cooking	Commonly consumed with bread or rice	(Al-Jawaldeh et al., 2021)
Koshary	Egypt	Lentils, chickpeas, wheat grains, garlic, and onions, Peas, vegetables, spices	Cooking	Considered Egypt's national dish, commonly served from street carts.	(Elhusseiny et al., 2018)

Table 2. continued

Dish	Origin	Main Ingredients	Cooking Method	Ethnic preferences and cultural habits	Reference
Bazella w riz	Lebanon	Meat, peas, carrots, and tomato sauce, Chickpeas/fava beans, herbs, spices	Cooking Shaping, deep-frying	Served as a comforting and satisfying meal during family gatherings.	(Sageer, 2017)
Riz ouzi	Middle East	Meat, peas, nuts, vegetables (commonly carrots), and spices, Lentils, rice, pasta, tomato sauce	Cooking, layering	Often prepared during special occasions and celebrations.	(Martín, 2021)
Riz b foul akhtar	Middle East	Meat, faba peas, carrots, tomato sauce, rice	Simmering, serving over rice	A common dish enjoyed throughout the region, often served with meat or vegetables.	(Pasqualone et al., 2020)
Msabihat el hommos	Middle East	Chickpeas, tahini, lemon juice, garlic, and olive oil. Rice, minced meats, peas, nuts, spices	Cooking, mashing together in a pot	Consumed as part of breakfast or as a light meal, often served with fresh vegetables.	(Sageer, 2017)
Adas bil hamod	Middle East	Lentil, lemon juice Rice, green fava beans, onions	Simmering	A simple and flavorful dish commonly enjoyed as part of everyday meals.	(Kaale et al., 2023)
Koftet adas	Middle East	Lentil, Hummus, tahini, lemon juice, spices	Shaping, Mixing, garnishing, cooking	Known for its rich flavor and versatility, often served with rice or salad.	(Sageer, 2017)
Sumaghiya	Palestine	Tahini, flour, meat, herbs, sliced chard, garbanzo beans, and spices, Lentils, lemon juice, garlic	Simmering	Prepared for festive occasions, symbolizing hospitality and community.	(Al-Jawaldeh et al., 2021)
Rummaniyeh	Palestine	Lentils, eggplants, garlic, and pomegranate or lemon juice, Lentils, spices, herbs	Simmering, cooking, Shaping, frying/baking	Enjoyed as a comforting and flavorful dish during family gatherings.	(Kalla, 2016)
Salalatet el hommos chami	Syria	Cooked chickpeas, tomatoes, parsley, mint, green onions, cucumbers, and spices Meat, sumac, tahini, vegetables	Cooking, boiling	Served as a refreshing salad or side dish, often paired with grilled meats.	(Corey, 1992)
Hamleh	Middle East	Chickpeas, vegetables, spices	Mixing, dressing	Enjoyed as a seasonal delicacy, often consumed during the spring months.	(Books, 2024)
Bajela	Middle East	Faba beans with garlic, lemon juice, olive oil, and spices, Persian noodles, legumes, herbs, spices	Various cooking, simmering methods	A common dish during Ramadan, symbolizing simplicity and humility.	(Books, 2024)
Hummus Balila	Lebanon	Chickpeas seasoned with lemon juice, garlic, and a variety of spices such as cumin, Fresh chickpeas, pods	Boiling Various cooking methods	Served as a popular street food or snack, enjoyed with pita bread.	(Almana, 2000)
Thermis	Egypt	Pickled lupine beans with lemon, salt, and occasionally cumin and dry pepper flakes Fava beans, garlic, lemon juice	Pickling Simmering, mashing	Consumed as a snack or appetizer, often enjoyed in social settings.	(Gabrial & Morcos, 1976)
Ghraiba	Tunisia	Chickpea flour, sugar, and butters, lemon, garlic, cumin	Baking Boiling, seasoning in the oven	Enjoyed as a sweet treat during religious and cultural festivals.	(Kouki et al., 1989)
Bsissa	Maghreb region	Wheat, barley, spices, and chickpeas, Lupine beans, lemon, salt, cumin	Roasting, milling Pickling, seasoning	Consumed as a nutritious and energizing breakfast option.	(Jribi et al., 2019; Yahyaoui et al., 2017)

5.5 Chorbet Adas

Chorbet Adas, also known as lentil soup, is a traditional Middle Eastern dish (Sageer, 2017). It is a soup made primarily from lentils, which are simmered with onions, garlic, tomatoes, and a blend of aromatic spices such as cumin and turmeric. Some variations may include additional ingredients like carrots, celery, or potatoes. Chorbet Adas is typically served hot and may be garnished with fresh herbs like cilantro or parsley and lemon juice for added flavor. It is a popular food during the colder months.

5.6 Couscous with legumes

Originating from the Berber tribes of North Africa, couscous has been a dietary staple for centuries, with evidence of its consumption dating back to ancient times (Hammami et al., 2022). While the base is primarily semolina, traditional couscous dishes have several varieties from sweet to salty (Boukid, 2021a). Couscous with legumes is a version that consists of steaming couscous and preparing a stew that includes several legumes such as chickpeas, lentils, and/or fava beans, vegetables, onion, and oil. Once couscous is ready, it is mixed with the liquid part of the stew, while the legumes are added as a topping of the dish. It is consumed particularly during the winter months. It is also a more affordable version of that made with meat or fish (Hammami et al., 2022).

5.7 Mujadara

Mujadara is a popular Middle Eastern dish made primarily of lentils, rice or bulgur, and caramelized onions. It is a staple in many countries, including Lebanon, Syria, Palestine, and Jordan (Haddad et al., 2021). The dish is known for its simplicity, affordability, and rich flavor. The basic preparation involves cooking coral or green lentils and rice together, seasoned with spices like cumin and cinnamon (Al-Jawaldeh et al., 2021). The key to mujadara's distinctive flavor is the caramelized onions, which are slowly cooked until golden brown and sweet, then mixed into the lentil and rice mixture. Mujadara variations may include additional ingredients like bulgur wheat, tomatoes, or garlic, depending on regional preferences and personal tastes (Haddad et al., 2021). It is a versatile dish that can be adjusted to suit different dietary restrictions or flavor preferences.

5.8 Mujadara bahiryeh

Mujadara bahiryeh is a distinct dish in Middle Eastern cuisine. It features a base of cooked whole lentils typically seasoned with a blend of spices such as cumin and coriander. Mujadara bahiryeh is often served as a main course or side dish accompanied by bread (Al-Khusaibi, 2019).

5.9 Lentil Kibbeh

Lentil kibbeh is a vegetarian version of the traditional Middle Eastern dish known as kibbeh, which is typically made with bulgur wheat and ground meat, often lamb or beef. Lentil kibbeh replaces the meat with cooked lentils. To prepare lentil kibbeh, cooked lentils are mixed with bulgur wheat, onions, and a variety of spices, such as cumin, coriander, and cinnamon, to create a flavorful mixture. This mixture is then formed into a dough-like consistency and typically shaped into oval or round patties. The kibbeh patties are either baked or fried until golden brown and crispy on the outside while remaining moist and tender on the inside (Auman Pitts & Kabalan, 2022).

5.10 Lablabi

Lablabi is a traditional Tunisian dish comprising chickpeas as its primary ingredient. The preparation involves the utilization of torn pieces of stale bread and cooked chickpeas (Kouki et al., 1989). Then, the cooking water of chickpea was added to soften the bread and give the dish a thick paste consistency. The seasoning of Lablabi is characterized by the incorporation of olive oil, harissa, garlic, and cumin. Additionally, in the modern version, tuna and boiled egg might be added to the top of the dish.

5.11 Mermez

Mermez is a Tunisian stew made with lamb or beef, chickpeas, onions, garlic, tomatoes, and a blend of spices such as cumin, black pepper, and harissa (Kaak, 1983). The used chickpea should be soaked overnight and then boiled in water. Mermez is typically simmered until the meat is tender. This dish is served accompanied by bread.

5.12 Ful medames

In Egypt, ful medames are made from broad beans, and it is a common daily meal (Elhusseiny et al., 2018). Ful means beans and "medames" translates to "buried," referring to the traditional cooking method involving burying a pot containing water and beans under hot coals to cook overnight (J. Lucas, 2023). Preparation typically begins with dried broad beans, necessitating soaking to soften before cooking. The beans are then simmered over low heat for several hours until tender.

In Tunisia, it can be called Ful medames or also Ful bil-kammun due to the prominent use of cumin in its seasoning (kammun means cumin). Broad beans are boiled alongside lemon, then strained and seasoned with olive oil, cumin, and harissa (chili pepper paste).

5.13 Fattat Hummus

Fattat Hummus is a traditional Middle Eastern dish, with different variations across countries like Egypt, Lebanon, and Syria (Al-Jawaldeh et al., 2021). While the specific origins of Fattat Hummus are unclear, it likely evolved over centuries to utilize staple ingredients like hummus, chickpeas, and tahini. To prepare Fattat Hummus, a layer of warm hummus is spread on the bottom of a serving dish or plate. It is then topped with a layer of cooked chickpeas or ful medames (fava beans), followed by a generous drizzle of tahini sauce. The dish is often garnished with toasted pine nuts or almonds, chopped parsley, and a sprinkle of paprika or sumac for added flavor and color. In some variations, pieces of toasted bread or pita chips are added on top of the hummus and beans to provide texture and absorb the flavors of the dish. Additionally, a garlicky yogurt sauce may be poured over the top for extra creaminess and tanginess (Al-Jawaldeh et al., 2021).

5.14 Hummus be tahina

Hummus, also spelled as "hommos," is a popular Middle Eastern dish made primarily from cooked and mashed chickpeas blended with tahini (sesame seed paste), lemon juice, garlic, and olive oil (Reister et al., 2020). It is a staple in Levantine and Middle Eastern cuisine, where it is used as a dip, spread, or accompaniment to various dishes (Al-Jawaldeh et al., 2021). To prepare hummus, cooked chickpeas are combined with tahini, lemon juice, minced garlic, and olive oil in a food processor or blender. The mixture is then pureed until smooth and creamy. Additional seasonings such as salt, cumin, or paprika may be added to enhance the flavor (Reister et al., 2020).

5.15 Yakhnat Fassoulia

Yakhnat Fassoulia also called "Loubia bil zeit" is a traditional Middle Eastern dish, particularly popular in countries like Lebanon, Syria, and Jordan. It is a stew made primarily with white, red, or green beans, lamb or beef, and a variety of aromatic spices. To prepare Yakhnat Fassoulia, green beans, along with meat, onions, garlic, and tomato paste, are simmered over low heat until the meat is tender (Sageer, 2017). The dish is seasoned with a blend of spices, which may include cinnamon, cumin, paprika, and allspice, among others. The stew is often accompanied by rice or bread. In North African countries, this dish is called "Loubia Khadra" which means green beans.

5.16 Market Loubiya

"Market Loubia" is a Tunisian dish made with white beans with white or navy beans. It is a stew prepared with meat, spices, and onion. This dish is similar to Lebanese Fasolia bi

Lahme (Al-Jawaldeh et al., 2021). Beans are soaked and cooked in water until softened then added to the stew made with olive oil, tomato, and spices, along with lamb or beef. The dish is typically served hot and accompanied by bread.

Loubia bil zeit is another dish made with green beans without rice. In North African countries, this dish is called "Loubia Khadra" which means green beans (Kouki et al., 1989). Both dishes are stews made with green beans in pods with tomato, meat, and onion.

5.17 Market Jelbena

Market jelbena is a traditional Tunisian peas stew. Makert means stew while jelbana is pea in Tunisian dialect (Kaak, 1983). Typically prepared with a base of fresh or dried peas, Market Jelbena incorporates a variety of vegetables such as onions, garlic, tomatoes, carrots, and potatoes. Spices like cumin, coriander, paprika, and saffron lend a distinctive aroma and flavor profile to the stew. It is traditionally accompanied by crusty bread. Yakhnat bazella is a Middle Eastern variation of this dish and it is made with peas, carrots, and meat (Kouki et al., 1989).

5.18 Falafel

Historically, falafel is believed to have originated in Egypt, where it was made from fava beans. However, its popularity spread throughout the Middle East, and today, it is consumed across the region and beyond. Over time, chickpeas became a common ingredient in falafel recipes, particularly in regions where they were more abundant. The main ingredients in falafel include ground chickpeas or fava beans (or a combination of both), herbs such as parsley and cilantro, aromatic spices like cumin and coriander, and onion. These ingredients are combined and shaped into small balls or patties before being deep-fried until crispy and golden brown (Jabeen & Katsioloudes, 2013).

5.19 Koshary

Historically, the modern-day koshary originated in ancient Egypt, known then as "Koshir" (Halawa, 2023). This ancient name translates to "Food of the rites of the gods." Koshir was a breakfast dish consisting of whole brown lentils, chickpeas, wheat grains, garlic, and onions cooked together over an open fire in clay pots. Today, Koshary stands as one of Egypt's most famous traditional dishes, widely consumed and available from street carts. While it was initially served as a breakfast meal, koshary is now consumed throughout the day, including for lunch, dinner, and snacks. Originally, Koshary was a dish made at home by combining leftover cooked rice, grains, pieces of thin pasta, and other available cooked grains or beans. Over time, it evolved into the classic recipe featuring short macaroni, brown or yellow whole grain lentils, white

rice, a spicy tomato sauce, and toppings of cooked chickpeas and fried onions. Koshary is commonly served in specialty full-service restaurants dedicated to the dish or from street kiosks in Cairo and other major Egyptian cities (Elhusseiny et al., 2018).

5.20 Bazella w riz

Bazella w riz is a traditional Lebanese pea stew with rice. It consists of stewed meat, peas, carrots, and tomato sauce. The cooking process involves preparing the rice separately from the stew (Sageer, 2017). The meat stew is typically simmered with peas, carrots, and tomato sauce until tender and flavorful. Meanwhile, the rice is cooked using a standard method. Upon completion, the stew is served over or next to the cooked rice. This dish has gained widespread popularity throughout the Middle East.

5.21 Riz ouzi

Rez ouzi, derived from the term "ouzi rice," denotes a specific culinary preparation commonly found in Middle Eastern cuisine. This dish features rice that is combined with minced meats, peas, nuts, vegetables (commonly carrots), and spices. Notably, all components are meticulously cooked together in a single pot, with rice being added as the final ingredient. This dish is often served during special occasions and celebrations in the Middle East (Martín, 2021).

5.22 Riz b foul Akhdarakhtar

Riz b foul akhtar, denoting rice with green fava beans, represents a common dish in Middle Eastern cuisine. The preparation method involves sequential cooking processes to ensure optimal texture and flavor integration. Initially, the fava beans are subjected to heat along with oil and onions until they reach a softened state. Subsequently, rice is introduced into the mixture, followed by the addition of an appropriate quantity of water, typically double the rice volume. The dish is then simmered over low heat to allow for gradual water absorption and complete cooking of both the rice and fava beans (Pasqualone et al., 2020).

5.23 Msabhat el hommos

Msabhat el hommos refers to a traditional Middle Eastern dish commonly consumed as part of breakfast. This dish features hummus, a creamy spread made from mashed chickpeas, blended with tahini, lemon juice, garlic, and olive oil. Msabhat el hommos is often accompanied by fresh vegetables, such as cucumbers, tomatoes, and radishes, as well as flatbread or pita for drizzling (Sageer, 2017).

5.24 Adas bil hamod

Adas bil hamod, denoting "lentils with lemon juice," represents a traditional dish in Middle Eastern gastronomy.

The cooking process involves simmering the lentils until they achieve the desired softness, followed by the incorporation of freshly squeezed lemon juice (Kaale et al., 2023). This infusion of acidity contributes to the overall flavor profile, enhancing sensory perception.

5.25 Koftet adas

Koftet adas, also recognized as lentil kofta, stands as a traditional dish in Middle Eastern cuisine. This dish features kofta, or meatballs, made from lentils as the primary ingredient. Lentils are cooked until tender, then mashed and combined with various seasonings, including herbs, spices, and aromatics such as garlic and onions. The mixture is shaped into small balls or patties, which are then typically fried or baked until golden brown and cooked through (Sageer, 2017).

5.26 Sumaghiya

Sumaghiya is a traditional Palestinian dish with roots in Gaza City. The dish gets its name from the main spice used, Sumac. This dish is made from a blend of sumac-infused water, tahini, and flour. To this mixture, cooked meat (typically beef), a variety of herbs, sliced chard, garbanzo beans, and spices are added. This stew is served with bread. Sumaghiyah holds a special place in Palestinian culinary traditions, often prepared for festive occasions like weddings, funerals, and Eid celebrations (Kalla, 2016).

5.27 Rummaniyeh

Rummaniyeh is a traditional Palestinian stew. The primary ingredients for this dish include lentils, eggplants, garlic, and pomegranate or lemon juice. Brown lentils and eggplants are simmered until the mixture is cooked. Then, lemon juice (and/or pomegranate juice) and pomegranate molasses are added. In the final step, fried garlic in olive oil, combined with green chili, is incorporated. For serving, this stew is garnished with pomegranate seeds, parsley, and a drizzle of olive oil. Rummaniyeh is often served with Arabic flatbread (Kalla, 2016).

5.28 Salalatet el hommos chami

Salalatet el Hommos Chami is a Syrian dish made with chickpeas, often served as a salad. Cooked chickpeas, tomatoes, parsley, mint, green onions, cucumbers, and red bell pepper are mixed with the dressing. The dressing is made by blending minced garlic, lemon juice, olive oil, salt, and pepper. Sumac can be also added. Salalatet el Hommos Chami could be served with grilled meats, pita bread, or as part of a mezze spread (Corey, 1992).

5.29 Aush reshteh

Aush reshteh is an Iranian thick dish consisting of a blend of Persian noodles ('reshteh'), kidney beans, chickpeas, and green lentils. Legumes are cooked with herbs and spices and then reshteh is added to the soup. Liquid kashk, a traditional fermented dairy product, is commonly added as a staple ingredient to this soup. This dish is often served during festivities. Currently, both reshteh and kashk can typically be found at Middle Eastern grocery stores.

5.30 Hamleh

"Hamleh" refers to the raw, fresh form of chickpeas. In their fresh form, they are soft and green, encased in pods. These fresh chickpeas are harvested before they fully ripen and turn yellow (Books, 2024). This fresh form of chickpeas could be consumed as snacks in Middle Eastern and Mediterranean cuisines. Hamleh could also be roasted or be used in a variety of dishes, from salads to stews, where its fresh, earthy taste adds a unique dimension to the dish.

5.31 Bajela

Bajela is fava bean-based Middle Eastern dish (Books, 2024). Bajela can be prepared in various ways. One common preparation of Bajela involves simmering fava beans with garlic, lemon juice, olive oil, and spices until the beans are tender (Pasqualone et al., 2020). The dish can be served as a stew, sometimes with additions like tomatoes, onions, or bell peppers for added depth of flavor. In some regions, Bajela is also enjoyed as a simple dip or spread, where the cooked fava beans are mashed or pureed with olive oil, garlic, lemon juice, and spices. This dip is often served with fresh vegetables, pita bread, or as a side to grilled meats.

5.32 Hummus Balila

Balila is a traditional Lebanese dish characterized by boiled chickpeas seasoned with lemon juice, garlic, and a variety of spices such as cumin. Typically served hot as part of a meze assortment, this dish offers a sensory experience of diverse flavors and textures (Almana, 2000).

5.33 Thermis

Thermis also called termos, known as pickled lupine beans, represents a popular street snack in Egypt. The pickling process involves fermentation, a microbial transformation that leads to the development of desirable flavors and the preservation of the beans. There are two primary types of pickled lupine beans: sweet and bitter. The sweet variety entails soaking the lupines for 24 hours with one water change after 12 hours, resulting in a milder flavor profile (Gabrial & Morcos, 1976). Conversely, the bitter type involves a longer fermentation period, with lupines soaked for 48 hours and

water changed every 12 hours to achieve a more robust flavor. Once the soaking phase concludes, the lupines are preserved with water in jars. For serving, common seasonings include lemon, salt, and occasionally cumin and dry pepper flakes, which contribute to the overall taste and aroma profile of the dish.

5.34 Ghraiba

Ghraiba also Ghraïba or Ghrayba is a traditional Tunisian cookie. There are various versions of Ghraiba, the basic ingredients typically include flour, semolina, sugar, and butter. One of the variations of Ghraiba involves replacing semolina with chickpea flour, and it is called "Ghraibet Homs". The other basic ingredients such as sugar, butter, and sometimes additional flavorings like vanilla or orange blossom water, remain the same (Kouki et al., 1989). To make Ghraiba with chickpea flour, the ingredients are mixed to form a dough, similar to the semolina-based version. The dough is then shaped into rounds, balls, or crescents and baked. This variation of Ghraiba offers a gluten-free option for those who may have dietary restrictions or preferences. It is commonly prepared during Eid celebrations.

5.35 Bsissa

Bsissa is a common cereal-based breakfast in the Maghreb countries (Jribi et al., 2019). The main ingredients are wheat, barley, spices, and chickpeas (Jribi et al., 2019; Yahyaoui et al., 2017). Other ingredients such as fennel, and coriander, can be added as flavoring depending on the region's tradition. Commonly, for its preparation, cereals are cleaned, roasted, and milled into fine flour. As an oil-based porridge, the finely milled flour is mixed with olive oil and sugar to create a smooth paste. Alternatively, when combined with water and sugar, it transforms into a beverage. In small villages in Tunisia, Bsissa is still homemade during summer after the harvest. Currently, small brands in Tunisia sell Bsissa based on chickpeas. Also, a new variation made with lentils is currently available. They can be also found as ready-to-eat products in jars or as powders

6 Global influence and commercialization

Traditional legume-based dishes have gained widespread popularity beyond their countries of origin, thanks to globalization and cultural exchange (Lancelotti et al., 2021). The globalization and commercialization of traditional legume-based dishes have been facilitated by various factors, including increased international travel, cultural exchange, and advancements in food production and distribution technologies (Méjean et al., 2007). North African and Middle Eastern cuisines have become increasingly trendy in Western countries, leading to the commercialization and mass

production of dishes like hummus, falafel, and mujadara (Haddad et al., 2021). Packaged and ready-to-eat legume products have become ubiquitous in supermarkets worldwide, catering to the growing demand for convenient and healthy meal options. For instance, the global hummus market is forecasted to experience significant growth, with an anticipated increase from \$2.95 billion in 2021 to \$6.60 billion by 2028 (Fortune Business Insights, 2021). This growth is driven by factors such as rising consumer awareness of plant-based diets, increasing health consciousness, and a growing appreciation for ethnic foods. Additionally, consumers are increasingly seeking out products that align with their dietary preferences, including vegetarian, vegan, and gluten-free options. The availability of pre-packaged and ready-to-eat versions of these dishes in supermarkets and convenience stores has contributed to their widespread adoption among consumers with busy lifestyles. This reflects broader trends in the food industry towards convenience, health consciousness, and ethnic diversity.

A thorough value chain analysis for Middle Eastern and North African (MENA) legumes is essential to understand the distribution channels and marketing strategies that condition the success of these products internationally. While specific studies on the MENA legume value chain are limited, insights can be drawn from the legume value chains in Europe and the USA (Smadja & Muel, 2021; Tchoukouang et al., 2024). These established markets highlight the importance of efficient distribution channels, which range from direct farm-to-table outlets to comprehensive networks involving wholesalers and distributors. By understanding these dynamics, stakeholders can better navigate the international expansion of MENA cuisine (Martín, 2021). For instance, local restaurants and food chains from the MENA region have successfully exported their legume-based dishes to Europe and the USA. Examining the strategies used by these businesses to enter new markets can provide valuable lessons. One notable example is Just Falafel, a UAE-based fast-food chain that has successfully expanded internationally (Jabeen & Katsioloudes, 2013). Just Falafel's focus on a single dish, falafel, with adaptations for different cultures, showcases the potential for MENA cuisine to cater to diverse palates globally. This case illustrates how businesses can effectively navigate logistics, adapt their offerings, and leverage existing distribution networks to succeed in foreign markets. Additional case studies of other successful MENA restaurants and food chains, such as Zaytinya in the USA or Ottolenghi in the UK, would provide further practical insights. These examples can highlight different strategies, such as menu diversification, partnerships with local suppliers, and marketing approaches that resonate with local consumers.

Despite the successes, several challenges and barriers exist in the global expansion of MENA legume-based dishes. Cultural

differences, supply chain complexities, and competition with local products are significant hurdles. Understanding these challenges and developing strategies to overcome them is crucial for businesses aiming to enter new markets. Indeed, consumer trends and preferences vary across regions. Detailed information on consumer demographics, purchasing behaviors, and the popularity of specific MENA dishes can provide valuable insights for businesses. For example, the rising interest in plant-based diets in Western countries has created a favorable market for dishes like hummus and falafel. International food policies and regulations play a significant role in the commercialization of MENA legume-based dishes. Trade agreements, food safety standards, and labeling requirements must be carefully navigated. Understanding these regulatory frameworks is essential for successful market entry and expansion.

Recent technological advancements have facilitated the globalization and commercialization of traditional MENA legume-based dishes. Innovations in food preservation, packaging, and transportation have made it easier to maintain the quality and freshness of these dishes during long-distance shipping (Boukid, 2022; Fadji & Pathare, 2023). These advancements could contribute to the wider availability of MENA legume-based products in international markets.

One significant area for further research lies in understanding the nutritional composition of traditional legume-based recipes and their potential contributions to promoting health and well-being is crucial (Ali et al., 2023). Comparative studies analyzing the nutrient profiles, including protein, fiber, vitamins, and minerals, of these dishes can provide valuable data on their nutritional benefits. Moreover, investigating the bioavailability of nutrients and their impact on metabolic health could offer insights into the role of legume-centric diets in combating malnutrition and non-communicable diseases.

Moreover, investigating the environmental footprint of traditional legume-based dishes, including their carbon emissions, water usage, and land utilization, can inform strategies for promoting eco-friendly food choices and reducing food waste. Highlighting specific sustainability initiatives undertaken by MENA food producers and exporters can enhance the appeal of these products. Practices such as organic farming, fair trade, and efforts to reduce carbon footprints resonate with environmentally conscious consumers (Yanni et al., 2024). Additionally, exploring innovative approaches to incorporating locally sourced, seasonal ingredients into traditional recipes can support the development of sustainable food systems that prioritize environmental stewardship and biodiversity conservation.

Understanding the socio-cultural significance of traditional legume-based foods within their respective communities is

essential for preserving culinary heritage and promoting cultural identity. Research exploring the rituals, symbolism, and communal practices associated with these dishes can boost research agendas that address the complex interplay between food, culture, health, and sustainability in Middle Eastern and North African contexts.

7 Conclusion

The examination of traditional legume-based dishes across Middle Eastern and North African cuisines reveals both commonalities and unique culinary practices deeply intertwined with cultural heritage and historical traditions. These dishes not only serve as a testament to the rich tapestry of gastronomic diversity but also offer valuable insights into sustainable and healthy food trends within the region. Staple legumes such as chickpeas, peas, lentils, and faba beans have been integral to the diets of various cultures for millennia, providing essential nutrients, affordability, and sustainability. A wide variety of dishes featuring legumes are prepared across Southern Mediterranean countries, ranging from main courses to desserts. These dishes serve not only as nutritional staples but also as repositories of historical narratives and socio-cultural significance. Owing to increased awareness about the health benefits and sustainability of legumes, there emerges a renewed interest in these traditional gastronomic treasures. Many traditional Southern Mediterranean products have gained global popularity and are now sold worldwide. The sustained preservation and endorsement of these gastronomic traditions hold promise for fostering enhanced cultural exchange, culinary heterogeneity, and sustainable alimentary methodologies on a global scale.

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