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Symbolic meaning and use of broad beans in traditional foods of the Mediterranean Basin and the Middle East

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Abstract

Broad beans (*Vicia faba* L.) are rarely consumed in Northern Europe and in the USA, whereas they are constantly present in the culinary habits of the Mediterranean and Middle Eastern countries. This grain legume is characterized by interesting nutritional properties because of high levels of complex carbohydrates, proteins, and dietary fiber, coupled with a low content of saturated lipids and the presence of several bioactive compounds. However, broad beans are much more than a cheap source of nutrients. Among the oldest domesticated legumes, they have also a cultural value linked to an ancient symbolic meaning. Generally associated with funerary rituals, broad beans have also a positive significance being “dead” seeds with a regenerative capacity. This review focuses on the social symbolism of broad bean consumption and its associated rituals. Furthermore, the culinary habits related to this legume are analyzed along different Mediterranean and Middle Eastern countries, from Egypt to Iran. Soups, thick gruels, and purees were found to be by far the most common culinary preparations. Using the Egyptian *ful medames* as a model, the study highlights a link between broad bean-based dishes in different countries, which arises from similar environmental conditions and from cultural interactions along trade routes. Enhancing the knowledge of these ethnic legume-based foods could improve the diet of Western countries by increasing the consumption of legumes.

Keywords: *Vicia faba* L., faba bean, Nutritional composition, Anthocyanins, Bioactive compounds, *Ful medames*, *Purè di fave e cicorie*, Food of the dead, Symbolic food, Ethnic food, Food culture

Introduction

Vicia faba L. (family *Fabaceae*) is one of the oldest domesticated pulses. The earliest evidence of its farming dates back to 10,200 years ago in the Southern Levant [1]. As other edible plant species, pulses were first collected by hunter-gatherers. Then, together with cereals, pulses became part of the “agricultural revolution,” spreading in post-glacial Europe [2]. *V. faba* has

an efficient atmospheric nitrogen-fixing ability and well adapts to climate change, hence could feed future generations [3, 4].

Based on seed size, three botanical *V. faba* varieties are distinguishable, although the classification is not always effective due to environmental influence on this character. *Vicia faba major*, or broad bean (named “fava bean” in the USA, from the Italian word *fava* which means “broad bean”) [5], has seeds having thousand seed weight higher than 1000 g. *Vicia faba* var. *equina*, or horse bean, has seeds of intermediate size (thousand seed weight from 700 to 1000 g) whereas *Vicia faba minor*, or faba bean, also named field bean, has smaller seeds (thousand seed weight from 500 to 700 g) [6]. Broad bean is cultivated for edible use, whereas horse

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bean is mostly used as animal feed, and faba bean for crop rotation and livestock nutrition. The amount of beans used for animal feed is greater than for human consumption [7]. Besides seed size, also seed color can vary considerably among varieties (Fig. 1), from greenish-beige to brown and violet [8].

The greatest global producer of *V. faba* (considering broad beans and horse beans together) is China (Fig. 1), with 1,806,000 tons in 2018, followed by Ethiopia (988,000 tons), the UK (402,000 tons), Australia (388,000 tons), Germany, Morocco, France, and Egypt (around 150,000 tons each), Italy and Sudan (around 100,000 tons each) (Food and Agriculture Organization, 2019). Although with lower production, *V. faba* is the most cultivated legume in Algeria and Tunisia [9].

This review analyzes the nutritional quality of *V. faba* and the culinary habits related to broad beans in the area of greatest consumption, i.e., along the Mediterranean Basin and the Middle Eastern countries, from Egypt to Iran. Furthermore, this review focuses on the social symbolism of broad bean consumption and associated rituals in the same geographic area.

Vicia faba L. nutritional quality

V. faba has a very low content of saturated fatty acids and is an excellent source of proteins, complex carbohydrates and dietary fiber [8, 10]. Lysine is present at high concentrations, whereas the content of methionine and cysteine is low [8], making the combination with cereals able to meet dietetic requirements.

The composition of seeds, however, varies according to the variety. The *V. faba* samples shown in Fig. 1,

which were characterized by different phenotype and geographical origin, had a total fiber content ranging from 13.6 to 24.3 g/100 g on dry matter (d.m.) (Fig. 2). Minor variations affected the content of carbohydrates (52.7 ± 3.5 g/100 g d.m.), proteins (25.2 ± 1.1 g/100 g d.m.), lipids (1.5 ± 0.3 g/100 g d.m.), and ashes (3.4 ± 0.3 g/100 g d.m.). The level of saturated fatty acids (mean value 19.5 g/100 g d.m.) was much lower than polyunsaturated fatty acids (mean 57.9 g/100 g d.m.) confirming the data available in literature [11]. Polyunsaturated fatty acids have been detected also in green pods [12].

Faba beans contain also secondary metabolites, such as phenolic compounds [13–15]. These antioxidant minor constituents are thought to play a role in disease prevention. Among them, anthocyanins are present only in violet seeds, where are responsible for pigmentation [16]. Other compounds, however, are antinutritional factors, such as tannins, phytates, stachyose, saponins, and lectins [8, 17, 18]. Tannins (proanthocyanidins) are related to seed coat color: lighter seeds have lower tannin content [8], and tannin-free *V. faba* varieties have almost white seeds [19]. As for phytates, the breeders made available varieties having low phytates and high phytase activity [20].

Regarding the *V. faba* samples shown in Fig. 1, total anthocyanins varied considerably: from 2.7 to 108.3 mg cyanidin 3-*O*-glucoside/kg d.m. in the greenish-beige (coded 112082) and in the violet variety (coded 106560), respectively (Fig. 2). The total carotenoids varied from 8.9 to 16.8 mg β -carotene/kg d.m., while minor variations were observed for phenolic compounds and phytates.

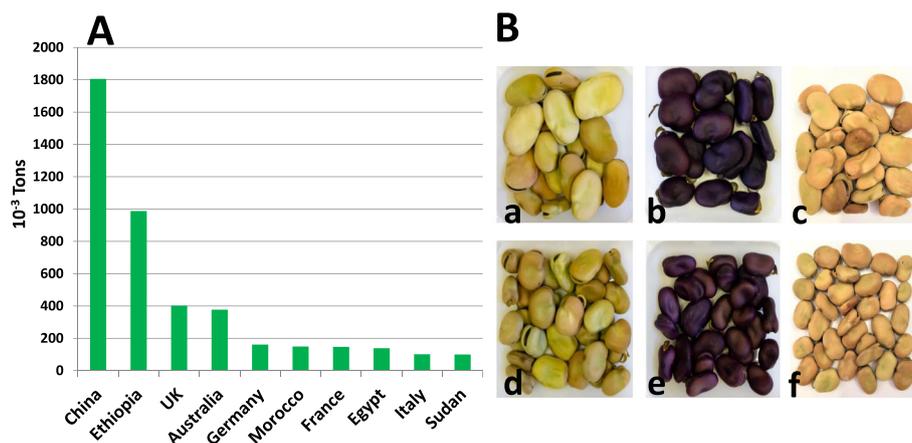
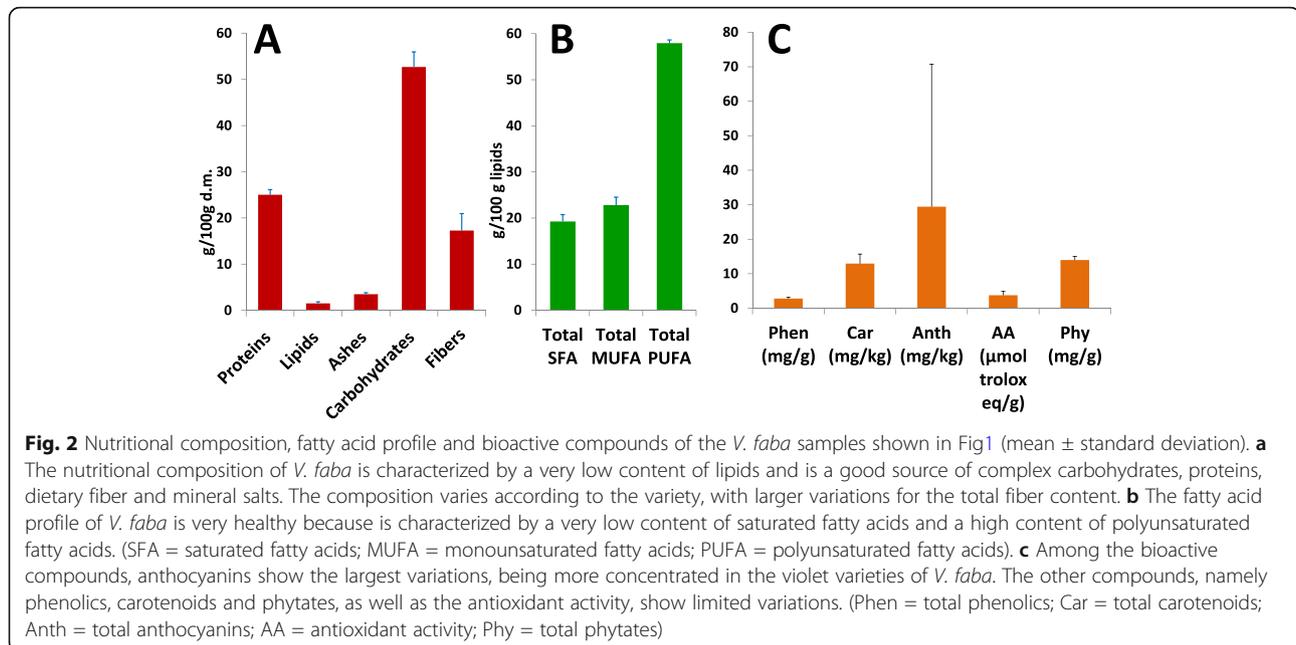


Fig. 1 World production and phenotypic biodiversity of *V. faba*. **a** First 10 producers of broad and horse beans in 2018 (tons). The greatest world producer is China, followed by Ethiopia. (Own elaboration from FAO data available in: <http://www.fao.org/faostat/en/#data/QC>). **b** Dry seeds of *V. faba* having different size (from small to large) and coat color (greenish-beige, violet and light brown), as an example of phenotypic biodiversity within the species. Their unambiguous identification number and geographic origin are: a = 112082 (Morocco); b = 106560 (Sicily, Italy); c = 110195 (Apulia, Italy); d = 108425 (Egypt); e = 110184 (Apulia, Italy); f = 111894 (Lybia). The samples are from the Institute of Biosciences and Bioresources of the National Research Council of Italy (IBBR-CNR). More information about them and the collecting site are available in the Mediterranean Germplasm Database, available in: <http://ibbr.cnr.it/mgd/?action=search&p=spp>



The content of antinutrients is generally reduced by peeling (dehulling), sprouting, soaking, boiling [17, 18], and extrusion cooking [21]. Significant leaches in the soaking medium have been reported also for phenolic compounds [22]. The phenolic content and antioxidant activity of faba beans are affected by cooking [13, 14, 21].

V. faba seeds contain also specific glycosides, namely vicine and convicine [8], which are implicated in favism, a hemolytic anemia occurring in people carrying a genetic deficiency of glucose-6-phosphate dehydrogenase (G6PD) [23]. These glycosides can be greatly reduced by soaking the seeds [24] and by thermal processing, such as boiling, roasting, microwaving, and frying [25, 26], as well as by fermentation [27].

Compounds of interest are choline [28] and levodihydroxy-phenylalanine (L-DOPA) [29]. The first is essential for the synthesis of phospholipids of cell membranes and for cholinergic neurotransmission in humans [30], whereas L-DOPA, found in seedlings, green pods, and seeds of *V. faba*, is the precursor of the neurotransmitter dopamine [29].

Symbolic meaning of broad beans

All the seeds, such as grains and legumes, are “dead” but have a positive significance because of their regenerative capacity. In ancient times the seeds, and in particular broad beans, were associated with death and the deceased [31, 32]. The ancient Romans believed that the plant of faba bean was directly linked with the underworld due to its long roots and stem with little ramifications (Fig. 3) [31, 33], therefore this plant was

considered able to bring the dead back to the world of the living. Moreover, broad beans were said to house the souls of the dead [31]. The black spots on the flowers (Fig. 3) were associated with mourning. At Roman funerals, broad beans were spread over the tombs to give peace to the deceased [31], whereas toasted broad beans were distributed, together with bread, during the *dies parentales* (literally, in Latin, “days for celebrating the memory of the family’s dead”) [34].

The celebration of All Souls’ Day, instituted in the monastery of Cluny (France) in 998, was the Christianization of an old Celtic feast in honor of the dead [31]. On All Souls’, the dead were supplied with grains and legumes through direct offerings, keeping an empty place at the table for the dead, or as alms for beggars and poor people in suffrage of the dead.

In Italy, broad beans were distributed to the poor during funerals [35], and also, in Malta, these beans were a typical “funeral food” [36]. On the other hand, food in a broad sense plays a central role also in the celebration of the Islamic funeral [37]. The funerary banquet, similar to the *consolo* (banquets made in Southern Italy for “consoling” the relatives of the deceased for the loss of the beloved), typifies the symbolic relations between the living and the dead [38]. A similar role is played by food offerings to the poor during the Islamic celebrations following the Ramadan: *Eid al-Fitr* (“Festival of breaking the fast”) and *Eid al-Adha* (“Feast of the sacrifice”) [37].

The ceremonial distribution of stewed legumes (most often broad beans) or cereals to singing beggars and children was traditional on All Souls’ in Italy during the Middle Ages and up to the nineteenth century (Fig. 4),

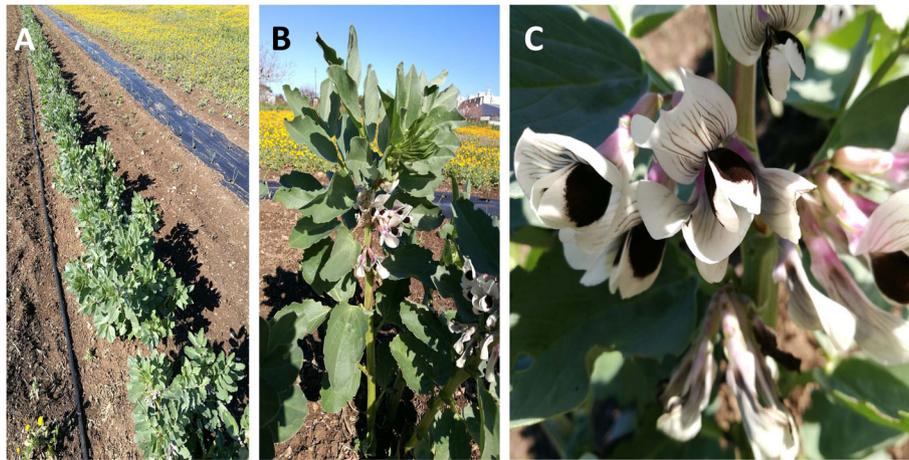


Fig. 3 *V. faba* plants and flowers. **a** A row of *V. faba* plants cultivated in a field located in Bari (Apulia, Southern Italy). Sown in November, flowering at the end of February, faba beans are usually harvested in April–May, when the seeds and the pods can be eaten fresh. After that period, they are marketed mostly as dry seeds. **b** A single *V. faba* plant, with the stem free of nodules and little ramifications. The ancient Romans believed that the plant of faba bean was directly linked with the underworld due to its long roots and slightly branched stem, therefore this plant was considered able to bring the deceased back to the world of the living. **c** Flowers of *Vicia faba* L. with the typical black spot in the center of the white petals. In ancient times, the bean flower was considered a sign of mourning because of the black spot

and people themselves consumed such food named *cibo dei morti* (in Italian “food of the dead”) [31]. A similar custom was, in ancient times, quite common along the coasts of the Mediterranean Basin [39]. By eating seeds, human beings could perpetuate life, while the dead could be reborn to a new life [31].

According to an old popular belief, the dead visited their homes on the night before All Souls’ Day bringing sweets to children of their family, such as small cookies shaped as broad beans, named *fave dei morti* (literally, in Italian, “broad beans from the dead”) (Fig. 5), or cookies shaped as bone pieces, named *ossa dei morti* (meaning “bones of the dead”) (Fig. 5) [31]. The main door of the house was left open and a plate with some food was kept at the table, for the soul of the deceased. The traditional custom of preparing *fave dei morti* and *ossa dei morti* for celebrating All Souls’ still survives in several Italian regions [31, 40].

Broad beans and other legumes are most often sown in late autumn/mid-winter, a period that can be considered an agricultural new year because of the annual regeneration. In Southern Italy, the distribution to the poor of cooked grains and legumes took place in the past also on the day of Saint Lucy (December 13), near the mid-winter solstice, after which the daylight starts increasing again. Cereal grains or legumes were also ceremoniously consumed and distributed to the poor in other special days of the same period, such as for lentils on New Year’s Eve (December 31), and broad beans on the day of Saint Anthony (January 17) [31].

Furthermore, since broad beans are very nutritious, they are eaten before sunrise during the Islamic

Ramadan, to help people fast more easily during the daytime. Similarly, during the Christian Lent, which involves refraining from eating meat, broad beans are eaten more frequently.

Broad beans in the traditional gastronomy

In recent years there has been an increase in the consumption of pulses in Western countries, where they are increasingly considered healthy foods, paralleling the growing number of vegetarian/vegan consumers. The United Nations encouraged this increase by declaring 2016 as “International Year of Pulses” (IYP) prompted by “the need to heighten public awareness of the nutritional benefits of pulses and to further sustainable agriculture” [41].

However, the consumption of broad beans is still seldom found in Northern Europe and the USA, except as roasted and salted seeds for a snack [42]. On the contrary, broad beans are a traditional staple food throughout the Mediterranean Basin and the Middle East, as well as in India, Pakistan, and China.

Broad beans are usually marketed dried and eventually peeled (split broad beans) (Fig. 6). Peeling, in fact, allows to shorten cooking times. When available, the fresh product is also consumed: seeds and pods are marketed fresh at the time of harvest, or frozen, to be used as vegetables (Fig. 6).

Broad beans can be cooked in several ways, including stewing, baking, and frying (Fig. 7). Fresh seeds can be eaten also raw. However, soups, thick gruels, and purees are by far the most common culinary preparations,

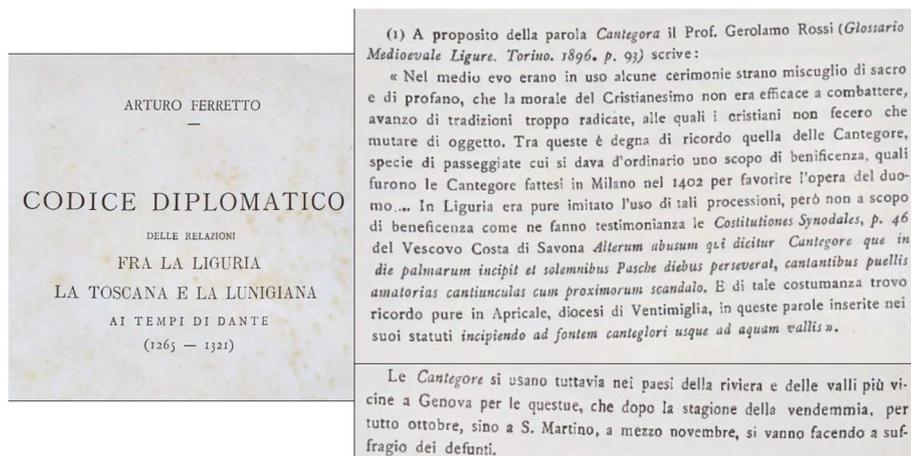


Fig. 4 Traditional customs on All Souls’ Day in Italy. Title page of a book dating back 1901 by Arturo Ferretto, who collected all the documents from 1265 to 1321 constituting *il codice diplomatico delle relazioni tra la Liguria, la Toscana e la Lunigiana ai tempi di Dante*, i.e., “the diplomatic code of the relationships between some regions of Northern Italy (Liguria, Lunigiana, and Tuscany) at the times of Dante Alighieri.” This book reports about the use of giving *cantegore* and explains that the *cantegore* were songs for the souls in purgatory that, during the Middle Ages, were traditionally sung by young people in the period from October to mid-November (and in particular on All Souls’ Day), as they walked begging for various foods, including faba beans. This medieval tradition survives in a few places in Italy, but traditional seasonal sweets are given away instead of beans and grains. (The digital document is from Società Ligure di Storia Patria. Biblioteca digitale. 2011. https://www.storiapatriagenova.it/Docs/Biblioteca_Digitale/SB/619ed2f0c43179836ebfd1c242eb3493/767cae010882c8c7d724846b01a31392.pdf).

constantly present in the gastronomy of the Mediterranean and Middle Eastern countries.

Egypt: Ful medames

In Egypt, faba beans are largely consumed [5]. Egyptians eat faba beans in various ways, the most popular of which is a dish named *ful medames* (or *ful/foul medam*

mes/mudammes/mudammas/midammis), or simply *ful* (pron. *fūl*). *Ful medames* is a very simple dish composed of whole or mashed broad beans. Very cheap, sold by street vendors with their traditional carts (Fig. 8), or in restaurants, *ful medames* is so popular that it can be considered the Egyptian national dish [43]. Able to satiate for a whole day due to its high fiber content, *ful*

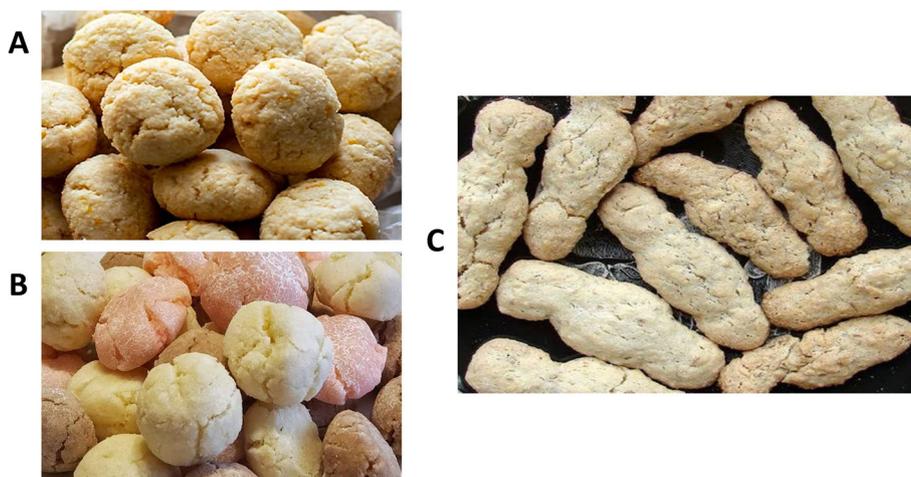


Fig. 5 Traditional sweets consumed on All Souls’ Day in some regions of Italy. **a** Small cookies shaped as broad beans, named *fave dei morti* (literally, in Italian, “broad beans from the dead”). These cookies, basically made of almond flour and sugar, are usually prepared for celebrating All Souls’ in several Italian regions, such as Liguria, Veneto, Emilia Romagna, Lazio, Lombardia, Marche, and Umbria. **b** A slightly colored version (pale yellow, pink and pale brown) of the broad bean shaped cookies *fave dei morti*. This version is typically consumed in Friuli Venezia Giulia and particularly in the area of Trieste, Italy. **c** Cookies shaped as bone pieces, named *ossa dei morti* (meaning “bones of the dead”). They are traditionally prepared for celebrating All Souls’ in Sicily, but also in several regions of Northern Italy, such as Piemonte, Lombardia, Veneto, and Tuscany

medames is usually consumed at breakfast. During Ramadan, this dish is eaten before sunrise, to help people fast more easily during the daylight hours.

Ful is the Egyptian Arabic word for “broad bean,” whereas *medames* means “buried,” referring to the original cooking method, which involved burying a pot, containing water and beans, under hot coals to cook overnight. *Ful medames* is typically prepared using dried broad beans, which have to be soaked in water to soften prior to cooking. Then, the beans are drained, added fresh water, and cooked slowly on the stove with a very faint flame, until tender (6 or 7 h) [43]. A special pot, a *ful*-pot, narrow at the base, wide in the middle, and narrow again at the top, is traditionally used (Fig. 9). This special pot is named *damasa* (or *damma*), being this word the adjective of *tadmiis*, which means “stewing.” Alternatively, the name of the pot is *qidra el-ful*, where *qidra* generically means “pot” in Arabic, but with the specification, *el-ful* becomes the pot used for preparing *ful medames*. The pots are made of copper (the oldest), aluminum, or stainless steel. Their size changes from small, only for domestic use, to large, such as those of the street vendors and restaurants (Fig. 9).

To meet the needs of modern consumers, cooking times can be shortened to 30–45 min by using a pressure cooker. Another strategy involves using small-sized beans. To skip totally home preparation,

however, canned *ful medames* is largely marketed nowadays (Fig. 8).

Once cooked, the broad beans can be either kept whole or mashed, partly or completely, by a fork or a blender (Fig. 9). The skins are not removed; therefore, the characteristic color of *ful medames* is brown. Basic seasoning is composed of salt, oil, lemon juice, and cumin; then, other ingredients may be added to obtain different variants: *tahini* (sesame seed sauce), tomato sauce, or chili (Fig. 9) [43]. The dish can be garnished with lemon slices, finely diced tomatoes, onions, and cucumbers. A boiled egg can also be added and mashed into the beans, as well as cheese or cured beef (*pastirma*). *Ful medames* is served with the traditional flatbread [44], which can be used as a spoon to scoop up the *ful*.

Regarding oil, the most used in the preparation of *ful medames* are corn, sunflower, and linseed oil, the latter very spicy and therefore named *zyit har*, which means “spicy oil.” Also, clarified butter (*samna*) can be used.

Ful medames usually goes together with another Egyptian popular dish made of broad beans named *ta'meya* (or *ta'miyya*), well known also abroad as *falafel*. It has to be noted that in Lebanon *falafel* is made of chickpeas, whereas in Egypt, only broad beans are used. In Egypt, the combination *ful and falafel* is as popular as “fish and chips” in the UK. *Ta'meya* or *falafel* are legume fritters



Fig. 6 Fresh and dry broad beans. **a** Pods (**a**) and seeds (**b**) of broad bean to be consumed fresh, as vegetable, during the season. **b** Packages of frozen broad beans, easily available in Southern European retailers, less common in other areas. Frozen faba beans (green) replace the fresh product well, but are more expensive. **c** Dry split broad beans (*fave spezzate* in Italian). Drying prolongs shelf life in a cheaper way than freezing. Skin removal allows to shorten preparation times compared to whole broad beans. The majority of broad beans are marketed as skinned split beans throughout the whole Mediterranean Basin and the Middle East

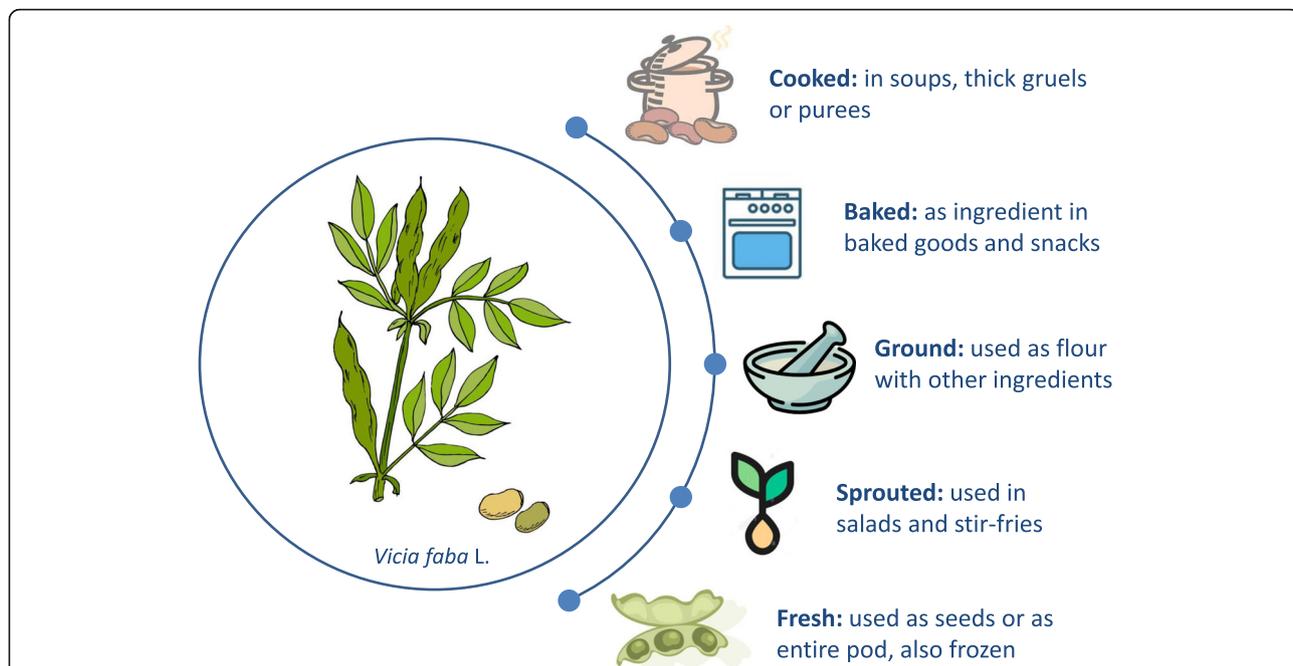


Fig. 7 Culinary use of broad beans. The culinary use of broad beans includes several different ways of cooking: stewing, baking, and frying. Each country has its own specific gastronomy. However, there is a link between recipes with broad beans across the Mediterranean Basin and the Middle East, because the most traditional preparations are invariably soups, thick gruels, and purees, with spices as the main element of differentiation. In addition, broad beans can be ground for subsequent use as flour mixed with other ingredients, or can be sprouted, to be used in salads and stir-fries

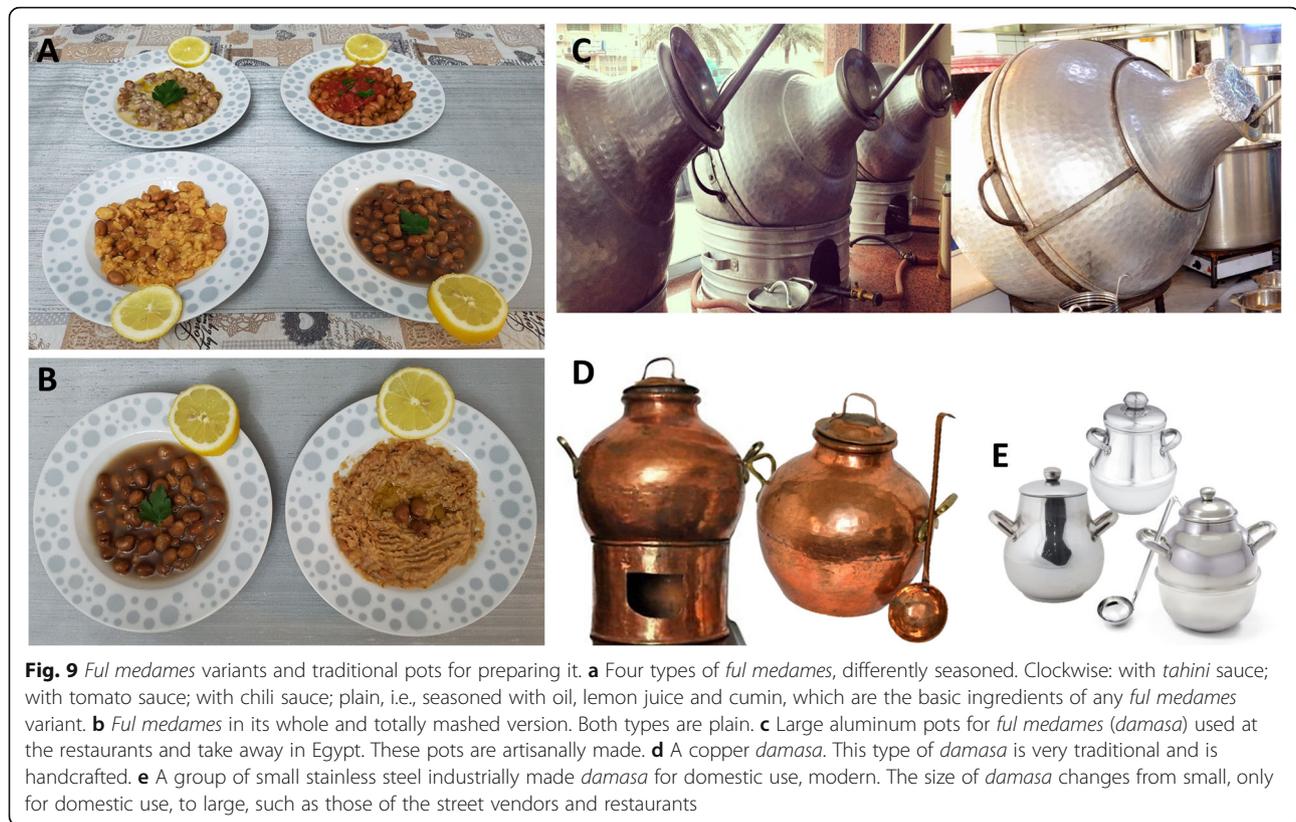
prepared by soaking skinned broad beans to soften, then draining them and adding chives, parsley, fresh coriander, garlic, dill, leek, green onions, baking soda, salt, and pepper to obtain a homogeneous mixture, which is portioned, shaped circularly, and externally seasoned with sesame seeds and dry coriander. The dumplings are

deep-fried until golden, then served, still hot, with flat-bread, *tahini* sauce, salad, and *ful medames* (Fig. 8) [43].

The origin of *falafel* is often, wrongly, attributed to Lebanon. Instead, *falafel* appeared in Egypt after the occupation by the English in 1882. The Egyptians were inspired by other types of fried croquettes (fish, meat,



Fig. 8 Consuming *ful medames* in the street. **a** A carts typically used in Egypt by the street vendors of *ful medames* (*Arabeyet el-ful*). **b** Usual decoration of the carts, depicting surah of the Quran, in this case the 113.01 and the 02.172 surah. The latter is related to food: *Oh you who have believed, eat from the good things which We have provided for you and be grateful to Allah if it is [indeed] Him that you worship.* **c** Traditional street serving composed of a dish, a *ful medames* seasoned with abundant *tahini* sauce, and, counterclockwise, *ta'meya* (broad bean fritters), fried potatoes, cottage cheese with diced tomato and oil, pickled eggplants, salad (finely diced tomato, onion, cucumbers, and lemon), and pickled vegetables. The fresh green is arugula



vegetable) originating from India and introduced by the British troops coming from there [45].

Another broad bean-based dish, whose preparation is similar to *ful medames* but involves the use of skinned beans, is the *bissara*. *Bissara* is found also in Moroccan cuisine. In Egypt, however, *bissara* is eaten exclusively as a dip for bread, whereas in Morocco, *bissara* can be either a dip or a soup. Moreover, Egyptian *bissara* has a green appearance, because its ingredients include herbs or leafy greens, such as parsley and coriander, mashed along with the beans. Other ingredients are vegetable oil, lemon juice, garlic, and cumin.

Fresh broad beans or *ful akhdar* (“green *ful*”) are also consumed in Egypt, as well as broad bean sprouts or *ful nabit* (or *nabid*).

Particularly popular in Egypt, Jordan, Lebanon, and Syria, *ful medames* is consumed also in Eritrea, Somalia, Ethiopia, Sudan, and Yemen. Furthermore, this dish is similar to several other Mediterranean broad bean-based culinary preparations, differing from *ful medames* only for the type of spices or herbs added and the final consistency of the dish.

Ethiopia: *Shahan ful*

Ethiopia is the second global producer of broad beans [9]. In rural areas, these legumes play a fundamental role

in preventing child malnutrition [46]. *Shahan ful* is quite common in Ethiopia as well as in Eritrea and Sudan. It is prepared in the same way as *ful medames*. Once the beans have softened, they are crushed into a coarse paste and served with chopped green onions, tomatoes, hot green peppers, yogurt, feta cheese, olive oil, *tesmi* (spicy clarified butter), *berbere* (a traditional spice blend), lemon juice, cumin, and chili pepper. The dish is consumed more frequently during Ramadan and Lent.

Baqella nifro, meaning “boiled broad beans” in Amharic, are eaten during the period of mourning and on some religious holidays [47]. On the Thursday before Good Friday, to honor the Last Supper of Jesus Christ, Ethiopian Orthodox people traditionally eat the *gulban*, made of boiled broad beans and wheat, seasoned with a blend of hot spices.

Broad beans are also milled to flour, which is the basic ingredient of several traditional Ethiopian dishes having the appearance of a puree. *Hilibet* (or *hlbet*) is a paste of broad bean flour, seasoned with a sauce made of onion, tomato, and spices, consumed with the Ethiopian flatbread *injera* and stews [47, 48]. *Siljo* is prepared by cooking broad bean flour in a safflower extract to obtain a semi-solid slurry, then adding black mustard powder and allowing to ferment several hours until a sour taste is developed [48, 49]. Rue leaves and garlic are added

before consumption [48]. *Siljo* is particularly popular in the central highlands of Ethiopia during the fasting period preceding Easter [48].

Broad beans are one of the main components of *shiro*, a flour from a blend of roasted legumes (broad beans, peas, lentils, chickpeas), which is the basis of a creamy puree (“*shiro wet*”) very cheap and ubiquitously consumed in Ethiopia [49].

Tunisia: *Ful bi'l-kammun*

Ful medames is consumed also in Tunisia, seasoned with abundant cumin and therefore named *ful bi'l-kammun*, i.e., “broad beans in cumin.” To prepare it, broad beans are boiled with lemon, then strained and seasoned with olive oil, cumin, and *harissa*, the hot chili pepper paste traditionally used in Tunisia, Algeria, and Morocco.

Morocco: *Bissara*

Bissara (or *bessara/besarah/paysar*) is a broad bean-based dish very popular in Northern Morocco, particularly at breakfast. Prepared also in Egypt, the Moroccan version of *bissara* is different from the Egyptian one. Broad beans are boiled with some garlic and salt, then finely mashed after cooking. The dish is seasoned with olive oil, cumin, and paprika [50]. The final consistency varies from a creamy soup to a puree. *Bissara* is sometimes prepared using split peas or chickpeas.

Algeria: *Doubara*

In Algeria, the *doubara* is a soup of broad beans, eventually mixed with chickpeas, seasoned with salt, garlic, tomato sauce, coriander, cumin, lemon, oil, and paprika. Also, the *bissara* is commonly eaten in Algeria, usually prepared as puree and spiced with cumin and paprika.

Another dish, traditional of North-Eastern Algeria, is the *harira ful*, i.e., a soup of legumes (mostly broad beans either dried or fresh) and vegetables [51].

Malta: *Bigilla*

Broad beans are largely consumed also in Malta. A local popular dish is the *ful bit-tewm*, meaning in Maltese “broad beans with garlic.” *Ful bit-tewm* is usually prepared in Spring with fresh broad beans and is associated with fasting during Lent and Good Friday. For the rest of the year, dried broad beans are used, which have to be soaked in water overnight, cooked with garlic and mint, then dressed with olive oil or vinegar before serving.

Ful bit-tewm is prepared with whole broad beans, without mashing them, whereas another traditional Maltese broad bean-based dish named *bigilla* requires mashing. To prepare the *bigilla*, broad beans are soaked overnight, then simmered until they are soft and the liquid is absorbed. The beans are then mashed with a

fork, added chopped garlic, and garnished with fresh parsley. Just before serving the dish, olive oil is added [52]. Similarly to *ful medames* in Egypt, *bigilla* was sold by street vendors running around the villages with small vans. Today, *bigilla* is also industrially made and marketed as a delicacy (Fig. 10).

Being Malta at the center of the Mediterranean Basin, its gastronomy is the result of Southern Italian, Spanish, Arabic, and Turkish influences. *Bigilla* is mentioned in the Maltese-Italian-Latin dictionary of Canonico Agius De Soldanis (1712-1770), a document of the eighteenth century where many Maltese gastronomic words are listed. Furthermore, the *Hierolexicon* of Domenico Magri [35] explains that *bigilla* derives from the ancient Turkish word *bagkala* or *bagala* (currently *bakla*, i.e., “broad bean”).

Mirroring the ideas concerning broad beans in antiquity [31], *bigilla* had a special symbolic value in Malta, being a typical “funeral food” [36]. Traditionally, it was distributed to the poor people or to the *bekkejja*, professional whiners accompanying the deceased to the church [35].

Italy (Apulia): *Puré di fave e cicorie*

In Apulia, a region of Southern Italy, a very traditional dish is *puré di fave e cicorie* (Fig. 11), i.e., “puree of broad beans with chicories” [53]. The puree of broad beans is prepared in the same way as *ful medames* and *bigilla*, but skinned broad beans are used to fasten cooking and to ensure a golden color also when brown or violet seeds are used. After cooking, the broad beans are pressed through a fine-meshed sieve to obtain a homogeneous puree.

To soften the consistency of puree and smooth its taste, a small potato may be added while cooking the beans, which will be mashed altogether, despite taste “purists” not accepting this variant. No spices are added, but the puree is typically served with boiled wild chicories, adding salt and a drizzle of oil to the dish [53]. Wild chicories are very bitter; therefore, the combination with the broad bean puree, which is sweeter, dilutes their strong taste [54].

Alternatively, the puree of broad beans can be combined with other ingredients, such as pasta, seafood, eggplants, and with the wild bulbs of tassel hyacinth (*Leopoldia comosa* (L.) Parl.). The latter, locally named *lampascione*, is considered a delicacy [54].

The habit of consuming non-cultivated edible plants was particularly common in the recent past in rural areas due to economic reasons. Also, broad beans were considered “the meat of the poor” because these were eaten to substantiate poor tables. Therefore, wild edible herbs and legumes were typical of peasant diet because these were the cheapest food. Nowadays these dishes are



Fig. 10 Canned broad bean-based foods. **a** Skinned boiled broad beans with oil and tomato sauce; with tomato and chili; plain; with cumin, all available at Egyptian retailers. **b** Canned Egyptian *ful medames*, useful to skip the long home preparation, consisting in soaking broad beans in water and cooking slowly on the stove with a very faint flame, until tender (6 or 7 h). **c** A couple of cans of Maltese *bigilla* from different companies. *Bigilla* is a traditional Maltese broad bean-based dish prepared in a similar way as *ful medames*. At the time, the *bigilla* was prepared and sold by street vendors running around the villages with small vans, as a cheap and quite common food, whereas today, it can be industrially produced and is marketed as a delicacy

still a simple domestic food, but are also served at the best restaurants.

In many Apulian towns, the tradition of eating boiled broad beans (a very simple version of *ful medames*, without any seasoning) on the day of Saint Anthony (January 17th) is still alive [53]. In that occasion, communal bonfires are lit in the main town squares, and unpeeled broad beans, soaked in water in traditional clay containers (*pignata*), are cooked next to the fire (Fig. 11). These containers have two handles on the same side, so that a long stick can be inserted to remove it easily from the fire (Fig. 11). Once cooked, the broad beans are mixed with olives and distributed to people (Fig. 11).

The cult of Saint Anthony is related to the fire because this Saint is believed to protect from the *herpes zoster*, popularly called “St. Anthony’s fire” [55]. The popular festivals in which fire is the protagonist are mostly concentrated around the end of the year when, after the winter solstice, the days begin to lengthen again, like a new season of life [55]. On the day of St. Anthony, also special breads are produced, which are blessed and distributed to the people together with the broad beans, as a symbol of the gifts of the earth. The ashes left after the bonfire are scattered in the fields to wish a good harvest.

Italy (Sicily): *Macco*

In the Italian island of Sicily, broad beans are used to prepare the *macco*, in a very similar way as the Egyptian *ful medames*. Broad beans are soaked overnight, simmered with laurel leaves, mashed, mixed with pasta, and seasoned with pepper and olive oil [56].

Variants of the *macco* involve the use of fennel, cooked together with the beans, and eventually the addition of tomato and onion, without pasta. Also, fresh broad beans (*fave fresche*) are used, in the variant *macco di fave fresche* [56].

Greece: *Koukia*

Koukia, meaning “broad beans” in Greek (singular = *kouki*), is a dish prepared by boiling fresh broad bean pods, then draining and frying with onion and garlic. The dish is seasoned with some dill, pepper, and lemon juice. Other vegetables can be added, such as artichokes (*aginares me koukia*) [57].

Turkey: *Bakla*

Bakla (also called *fava*) means “broad bean” in Turkish and is also the name of a popular broad bean puree. Broad beans, soaked before cooking, are boiled with some onion, then mashed and sieved to obtain a smooth



Fig. 11 Southern Italian traditions related to broad-beans. **a** A communal bonfire traditionally made to celebrate Saint Anthony's day (January, 17) in Southern Italy. The picture has been taken in Giovinazzo, in the Apulia region. Broad beans are being cooked close to the fire in traditional clay containers (locally named *pignata*) having two handles in which a long stick can be inserted to remove them from the fire. **b** A dish of boiled broad beans, mixed with olives, distributed to people on Saint Anthony's day in Giovinazzo, Italy. **c** A dish of *puré di fave e cicorie*, composed of a broad bean puree combined with wild chicories. This dish represents one of the most traditional and appreciated Apulian culinary preparations (Southern Italy)

puree, which is seasoned with lemon juice and red pepper [58].

Zeytinyağlı bakla, i.e., “broad beans in olive oil,” are prepared with *take bakla* (meaning “fresh broad beans in their pods”), chopped onions, tomatoes, garlic, lemon, and olive oil. Garlic yogurt is needed for serving, and a little dill/*dereotu* is used for garnishing [58].

Iraq: *Bagilla bil-dihin*

Broad beans, named *bagilla* in Iraq, are used to prepare the *bagilla bil-dihin* (meaning “broad beans with fat”), which is the Iraqi counterpart of the Egyptian *ful medames* [59]. This dish, very popular at breakfast, is also called *tashreeb bagilla* (being other spelling *tishreeb*, *tarheed*, and *thareed bagilla*) and is prepared by soaking flat-bread pieces in the cooking water of broad beans, then adding the cooked broad beans on the top, together with ghee, fried eggs, and onion [59]. Broad beans are often consumed in combination with rice, seasoned with dill, such as in the *timman bagilla* (“rice and broad beans”), where broad beans can be either fresh or dried [59].

Iran: *Baghalee pokhte*

Broad beans (*baghalee* or *baghali* in Persian) represent the basis of many traditional Iranian dishes. *Baghalee pokhte* is a typical finger food composed of boiled (*pokhte*) broad beans spiced with paprika, pepper, salt, and eventually vinegar, to be eaten one by one, removing the peel [47]. *Baghali ghatogh*, instead, is a dish made by stewing fresh broad beans with dill, garlic, turmeric, and

egg [60], whereas *baghalee polo* is “broad beans with rice” [47].

Conclusion

In conclusion, broad beans are much more than a cheap source of nutrients. Among the oldest domesticated legumes, they have a cultural value linked to an ancient symbolic meaning. Generally associated with funerary rituals, broad beans have also a positive significance because of their regenerative capacity, parallel to the beginning of daylight increase in the period in which they are sown.

The study highlights a link between broad bean-based dishes in different countries around the Mediterranean Basin and in the Middle East, despite the different combinations of seasonings and slightly different procedures. Similar environmental conditions, which lead to the availability of the same raw materials, as well as cultural exchanges and interactions along trade routes, are the main determining factors that can explain this link. Few Mediterranean dishes can be imagined without such exchanges. The continuous combination of these two factors over time has shaped eating habits in this vast geographic area and has generated the Mediterranean diet.

Broad beans, therefore, are constantly present in the foodscape of the Mediterranean and Middle Eastern countries, being soups, thick gruels, or purees the most traditional preparations. Particularly popular is *ful medames*, typical of Egypt but prepared throughout the

Middle East and consumed also in Eritrea, Somalia, Ethiopia, Sudan, and Yemen. Furthermore, *ful medames* is very similar to an array of broad bean–based dishes from other Mediterranean countries, differing mostly in the type of spices or herbs added for seasoning them.

Considered that broad beans are little consumed and even little known in Northern Europe and the USA, enhancing the knowledge of these ethnic tasty culinary preparations could improve the diet of Western countries by increasing the consumption of legumes.

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Authors' contributions

AP conceptualized the research, reviewed the literature, interpreted the data, and wrote the article. AA and CS provided data and information. CS acquired funding. AP, AA, and CS revised, read, and approved the final manuscript.

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Availability of data and materials

All data and materials have been presented in the paper.

Competing interests

The authors declare that they have no competing interests.

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