Genet Resour Crop Evol (2012) 59:31–38
DOI 10.1007/s10722-011-9664-y

RESEARCH ARTICLE

Semitic-language records of snake melons (*Cucumis melo*, Cucurbitaceae) in the medieval period and the "piqqus" of the "faqqous"

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Received: 22 October 2010 / Accepted: 17 January 2011 / Published online: 16 February 2011

Abstract The snake melon, *Cucumis melo* subsp. *melo* Flexuosus Group, is a cucurbit crop that was grown and esteemed in Mediterranean lands in antiquity and classical times. Images of snake melons appear in ancient Egyptian wall paintings and sculptures and in mosaics from the Roman Empire. The *sikyos* of Greek, the *cucumis* of Latin, and the *qishu'im* of Hebrew, thought by many to be cucumbers, *Cucumis sativus*, have now been identified as snake melons. Less iconographic and written evidence exists concerning the appreciation of snake melons during the medieval period. The present work focuses on some philologically based evidence of the importance of snake melons leading into and including the medieval period, with two specific objectives. One was to trace the records of the Hebrew epithet *piqqus*, which applied to removal of the hairs of young cucurbit fruits, and the Arabic epithet *faqqous*, used historically and to the present day to designate snake melons. Another objective was to re-affirm how *piqqus* was actually conducted, as mandated in the second-century code of Jewish Oral Law known as the *Mishna*. Various conjugational forms of the Hebrew word *piqqus* were found in writings dating from 200 CE to approximately 600 CE. Evidence is presented that further establishes the exact meaning of *piqqus* as the rubbing off of the hairs of young cucurbit fruits. The Arabic word *faqqous* was found in writings dating from the beginning of the tenth century and through to the end of the medieval period in the fifteenth century, the writers hailing from Andalusia in the west to Iraq in the east. These writings suggest that the snake melon was a familiar vegetable across a wide geographic belt throughout the medieval period.

Keywords Crop history · *Cucumis melo* · Cucurbits · Flexuosus Group · Mishna · Medieval crops · Philology · Semitic languages · Snake melons · Talmud

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Introduction

Snake melons, *Cucumis melo* L. subsp. *melo* Flexuosus Group (Cucurbitaceae), are widely grown in the Old World tropics and subtropics, from northern Africa to the Near East to the Indian subcontinent (Chakravarty 1966; Walters and Thieret 1993; Pandey et al. 2010). While most melon fruits have a nearly 1:1 ratio of length to width, cultivars of the Flexuosus Group are distinguished by their having fruits of a 4:1 or higher ratio (Pitrat et al. 2000; Burger et al. 2010). This great elongation of the fruits

is characteristic of cucurbits that have been intensively cultivated and selected for the consumption of their immature fruits (Paris 1989).

Cultivars of snake melons differ from one another in the exterior color of the immature fruits, which can be dark green, light green, or striped dark and light green (Chakravarty 1966; Pandey et al. 2010). They can also differ for longitudinal furrowing of the fruits from very shallow to very deep. Moreover, the 4:1 length-to-width ratio is often greatly exceeded as, for example, fruits over 50 cm long and only 5 cm wide are a common occurrence. Unlike the familiar dessert melons, *C. melo* subsp. *melo* Reticulatus, Cantalupensis, and Inodorous Groups, melons of the Flexuosus Group do not become sweet as they ripen, but instead become insipid or sour (Burger et al. 2006).

Like cucumbers, *Cucumis sativus* L., snake melons are harvested when they are immature and green, and typically are used when fresh or pickled (Walters and Thieret 1993; Pandey et al. 2010). Like other melons, snake melons flourish in warm, sunny climates but, unlike cucumbers, they are ill-adapted to cooler climates. For these reasons and more, scholars from temperate regions identified cucumbers as the elongated fruits appearing in depictions from ancient Egypt and from various Mediterranean civilizations of Roman times. Likewise, the literary allusions of antiquity, to the Greek *sikyos*, the Latin *cucumis*, and the Hebrew *qishu'im*, were thought to be to cucumbers. Unlike cucumbers, however, fruits of *C. melo* subsp. *melo*, including snake melons, are distinctly hirsute, softly hairy, when immature (Fig. 1; Kirkbride 1993; Jeffrey 2001). As pointed out by Feliks (1967), the descriptions by the Roman writers Columella and Pliny of the hairy downiness of the *cucumis* fruits are certainly not consistent with the fruits of *C. sativus*, which are glabrous, but instead with *C. melo*. Hebrew writings of Jewish Oral Law known as the *Mishna* and *Tosefta*, dating to the the second and third centuries CE, respectively, repeatedly mention that the *qishu'im* (also *qishu'in*, sing. *qishut*) underwent *piqqus* prior to being eaten. Saul Lieberman (1955), scholar of ancient Greek and Jewish Oral Law, observed that the ancient Greek *pekos* was the source of the Hebrew *piqqus*, and meant the removal of soft hairs. This Hebrew epithet, in functioning as a verb, becomes *lefaqqes* (inf.), *mefaqqes* (first pers. sing.), etc., and thus appears to be the origin for the Arabic epithet *faqqous* (Paris and Janick 2008a), which is used to the present day to denote the snake melon across the extensive Arabic-speaking geographical region south and east of the Mediterranean Sea (Issa Bey 1930; Hassib 1938).

Fig. 1 Part of harvested, young, snake melon fruits, *faqqous*, of *Cucumis melo* subsp. *melo* 'Armenian Striped' (*left*) and 'Tortarello' (*right*) showing the hairs, *piqqus*, on the fruit surface

The primary objective of this study was to assess the historical importance and value of snake melons by tracing the written records of the epithets *piqqus* and *faqqous* in the late classical and medieval periods. Another, secondary objective was to clarify how exactly *piqqus*, removal of the hairs of the fruit, was accomplished, based on the results of a modest experiment and supported by literary evidence. First, though, I will review the literature pertaining to the Mediterranean history of the snake melon from ancient Egypt through the Roman period.

Overview of the snake melon in ancient and classical times

The geographical origin of *Cucumis melo* is controversial, as plants of this species have been reported as

growing wild on several continents. New evidence has emerged that strongly indicates the Indian subcontinent as the central place of origin (Sebastian et al. 2010). Wild or primitive melons have also been described from elsewhere, including Sudan; the indigenous, cultivated melons growing there were described as small, striped, and varying from oblate to oval, and eaten fresh, pickled, and used as cooking ingredients (Mohamed and Yousif 2004).

The observations from Sudan are significant, given the close proximity of Sudan to Egypt and the Mediterranean Sea. Melons are the cucurbit most frequently encountered in Egyptian paintings and Mediterranean artwork and literature of antiquity (Zohary and Hopf 1993; Janick et al. 2007). Most of the melons illustrated on Egyptian wall paintings over 3,000 years old have a length-to-broadest width ratio of 2:1 or 3:1 (Keimer 1924). These, therefore, were proportionately longer and narrower than the indigenous melons of Sudan and typical of *C. melo* subsp. *melo* Chate Group (syn. Adzhur Group). However, a few of the melons found in these paintings were longer and narrower, having a length-to-broadest width ratio between 4:1 and 6:1 and therefore typical of the Flexuosus Group, and one painting shows these long melons as distinctly striped and another depicts them as furrowed (Manniche 1989). This is evidence that people had begun selecting long-fruitedness in *C. melo* over 3,000 years ago for culinary use of young fruits (Paris 1989). These melons are the *qishu'im* longed for by the Children of Israel during their exodus from Egypt (*Numbers* 11:5), and subsequently widely grown in Israel itself as a special word for a field of this crop, *miqsha*, appears in prophetic literature (*Isaiah* 1:8) (Feliks 1967; Paris 2009).

In Roman times, snake melons were a widely grown, much-appreciated cucurbit crop in lands around the Mediterranean Sea, as is plain from the collection of images presented by Janick et al. (2007). Another image of snake melons, not included by those authors, is found in a partially preserved wall painting from the ruins of Ercolano (Herculanum), a city destroyed by the eruption of Mount Vesuvius in 79 CE. In this painting, serpent-like striped melon fruits, closely resembling those of the extant 'Striped Armenian' (Goldman 2002) are depicted in and adjacent to a large glass jar. The representation of a glass jar suggests usage of snake melons for pickling. Obviously, snake melons, at least when not cut into pieces, would be ill-adapted for this purpose as quite a large jar would be required to hold them. Apparently, the snake melons were most often eaten fresh, though for out-of-season use they would have to have been preserved as pickles.

The esteem of snake melons is reflected in the Roman literature of the first century CE. Columella wrote of the hairy, snake-like *cucumis* (Forster and Heffner 1955) and Pliny wrote that the *cucumis* is covered with white down and can be made to grow into all sorts of long shapes (Rackham 1950). According to Pliny, the Emperor Tiberius of Rome commanded his subjects to make the hairy, snake-like *cucumis* available to him all year round (Paris and Janick 2008b).

The appreciation of snake melons is also apparent in the Jewish literature of the classical and early medieval period. The *qishu'im* (or *qishu'in*, sing. *qishut*) are discussed more than any other cucurbit crop in the codices of Jewish Oral Law known as the *Mishna* and the *Tosefta*, compiled in Israel circa 200 CE and 300 CE, respectively. One of the tractates in these codices (*Mishna*, *'Oqazin* 2:1) even contains a pun, *keshut shel qishut*, meaning the dense, soft downiness of the snake melon. One aspect concerning the *qishut* in these codices was the need for it to undergo *piqqus*, that is, the removal of its downy hairs, prior to eating. This discussion among rabbinical sages was repeated and elaborated in the Jerusalem Talmud, completed in Israel circa 400 CE, and the Babylonian Talmud, completed in Iraq circa 600 CE. In the latter work (Tractate *Berakhot* 57b), it is written that the great sage and compiler of the *Mishna*, Yehuda the President, had *qishu'in* on his table all-year-round to honor his many visitors.

Piqqus: rubbing off the hairs of young cucurbit fruits

The analysis, over the ages, of how *piqqus* was accomplished has been reviewed and evaluated exhaustively by the great Talmudic scholar Saul Lieberman (1955). I will not repeat his lengthy treatment. Overall, it is agreed that *piqqus* is accomplished by rubbing the fruits, but one question seems to have remained. In Jewish Oral Law, *piqqus* is mandated for two cucurbits harvested when still hairy, and therefore immature, the *qishu'im* and the

delu'im, the latter being edible, long-fruited bottle gourds, *Lagenaria siceraria* (Molina) Standl. Similarly, *sheliqa*, generally agreed to be a dipping in boiling water, is mandated for two other cucurbits, used when ripe, *avattiah*, watermelon, *Citrullus lanatus* (Thunb.) Matsum. et Nakai, and *melafefon*, round melon, most likely *C. melo* subsp. *melo* Adana Group. In his voluminous, critical treatment of the *Tosefta*, Lieberman (1955, p. 671) suggested that *sheliqa* might have been used to remove the hairs on a wide variety of vegetables. Feliks (2005), who identified correctly numerous plants mentioned in Scripture and Jewish Oral Law, took this comment one step further, and wrote that maybe *piqqus* was synonymous with *sheliqa*, that is, dipping of the fruits in boiling water would remove the hairs and might also improve their taste.

Given the doubt suggested by Feliks (2005), I conducted two modest experiments, in separate years, on young melon fruits. In the first trial, I dipped in boiling water a fruit of 'Carosello Barese' (*Cucumis melo* subsp. *melo* Chate Group), which is very hairy, and part of a fruit of 'Striped Armenian' (*C. melo* subsp. *melo* Flexuosus Group), which is moderately hairy. I observed that the dipping did not accomplish *piqqus* but rather quite the opposite, it appressed the hairs to the epidermis, making them more difficult to remove. I did this a second time, but this time I kept the fruits in boiling water for 5 or 10 min. No *piqqus* occurred; the hairs remained appressed to the fruit surface and were difficult to remove. I did not sense any improvement in flavor of the boiled fruits over the raw ones. In the second experiment, I used 'Striped Armenian' and 'Tortarello' (Flexuosus Group) (Fig. 1), doing the same as I did in the first experiment, and with the same results. Hence, *piqqus* (removal of the hairs) could not be accomplished by dipping in or prolonged treatment with boiling water. *Piqqus* and *sheliqa*, therefore, are not synonymous. Feliks (2005) suggested that watermelons and mature, round melons were mandated to undergo *sheliqa* to allow easy peeling of the rind. I did not test this, but there may be other explanations. Brief exposure of mature melons to hot water lengthens their shelf life (Fallik et al. 2000). Also, small insects and grit can get stuck in the hairs of immature cucurbit fruits and could only be removed efficiently together with the hairs; as I observed, the hairs can only be removed by rubbing, *piqqus*. However, merely dipping in boiling water, *sheliqa*, could be sufficient to remove insects and grit from "bald", ripe fruits.

Corroborating evidence exists in a medieval source. The *Mishne Tora*, the great work of Moshe Ben-Maymon (Maimonides, 1138—1204), rabbi, philosopher, doctor, scientist, and lexicographer, was completed in what is now Egypt in 1178 (Kraemer 2008). The *Mishne Tora* is comprised of Maimonides' analysis of the entire Oral Jewish Law, that is, inclusive of the *Mishna*, *Tosefta*, and Jerusalem and Babylonian Talmuds, and written in well-structured, clearly understood Mishnaic Hebrew. The *Mishne Tora* gathers together information from disparate parts of those four works and lucidly rearranges them into 14 books. In the *Mishne Tora*, many sentences are copied almost exactly as they appear in the four earlier works, with only slight changes to improve the grammar, sentence structure, or clarify the meaning.

Although the vocabulary used in the *Mishne Tora* is strikingly similar to that used in the *Mishna* and *Tosefta*, as Maimonides wanted his work to be understandable to as many readers of Hebrew as possible, there are some differences (Kraemer 2008). Of particular reference to *piqqus* are its conjugational forms in passages from the tractate *Ma'asrot* of the *Mishna*, *Tosefta*, and *Jerusalem Talmud*, and tractates *Beza* and *Bava Mezi'a* from the *Babylonian Talmud*. These passages are arranged together in the *Mishne Tora*, in Book *Zera'im*, Chapter *Ma'asrot*. In all cases, the conjugational forms of *piqqus* are replaced with the corresponding conjugational forms of *shifshuf*, rubbing. Here is a brief example:

We'im eno mefaqqes, misheya'amid 'arema
And if he does not conduct piqqus, then from [the time] when a pile is gathered
Jerusalem Talmud, Ma'asrot, 1: 5

We'im eno meshafshef, misheya'amid 'arema
And if he does not conduct shifshuf, then from [the time] when a pile is gathered
Mishne Tora, Book Zera'im, Chapter Ma'asrot, 3: 9

Maimonides did not use the word *lefaqqes*, found in various conjugational forms in the Talmud, in his *Mishne Tora*. In its place, he used the word *leshafshef*, which means to rub. Clearly, Maimonides, the

rabbi and linguist, knew what *piqqus* was and substituted it with a word that he thought would be more widely understood by his contemporary Hebrew-reading audience. *Piqqus* does indeed mean rubbing off of the hairs.

Usage of the epithet faqqous in the medieval period

From the above, Maimonides replaced the word *piqqus* and its conjugational forms with *shifshuf* for easier comprehension by the intended Jewish audience. I am unaware if the word *piqqus* survived in Hebrew documents beyond the time of the writing of the *Babylonian Talmud*, compiled in Iraq and finished circa 600 CE. After what appears to be a hiatus of some three centuries, its Arabic derivative, *faqqous*, made an appearance.

It seems strange that Abu Hanifa ad-Dinawari (d. 895), who studied in Iraq and compiled a lexicography of plants (Lewin 1960), did not use this epithet even though he briefly mentioned the *qitha* (Hamidullah 1973, 1993), the Arabic equivalent of the Hebrew *qishu'im*, which in both languages can be a generic term applying to both chate and snake melons, or specifically to snake melons. *Faqqous*, however, refers exclusively to snake melons (Issa Bey 1930; Hassib 1938).

Ar-Razi, ca. 920 CE

Muhammad ibn Zakariyya Ar-Razi (865–925), of Rayy, northern Persia, travelled to Baghdad to study medicine. In his *Manafi' al-Aghdhiya wa-Daf' Madarriha* [*Treatise on Foods and Correctives*], he wrote that the *faqqous* were a bad, indigestible food when large, but that the young, tender *faqqous* were much better (Ar-Razi 1982). This literary use of the epithet *faqqous*, in the first quarter of the tenth century, is the earliest known to me.

Al-Warraq, ca. 950 CE

Ibn Sayyar al-Warraq wrote a comprehensive cookbook, *Kitab al-Tabikh*, describing the cuisine of the royalty and dignitaries of mid-10th-century Baghdad (Nasrallah 2007). In this book, the *faqqous* is mentioned as a garnish for a summer dish.

Al-Ghafiqi, ca. 1160 CE

Ahmad Al-Ghafiqi, a prominent Andalusian physician, wrote his *Kitab al-Adwiya al-Mufrada* (Book of Simple Drugs) around 1160. Only an abridged version of this work has survived. The original version very likely alluded to *faqqous*, as Meyerhof and Sobhy (1932) wrote that Ibn al-Baytar's book of pharmacology, written almost a century later (see below), was derived almost entirely Al-Ghafiqi's now lost book.

Maimonides, 1168 CE

Maimonides completed a major work on Jewish Law, his *Commentary on the Mishna*, in Egypt a decade prior to his *Mishne Tora* (Kraemer 2008). Although the *Mishna* itself was written in Hebrew, Maimonides used Judeo-Arabic (Arabic written in Hebrew characters) for his *Commentary*, as Arabic was the *lingua franca* of the Middle East and northern Africa. For *Kil'ayim* (Crossing) 2:1, Maimonides explained that the *qishut* is called (in Arabic) *faqqous*. For *Ma'asrot* (Tithing) 1:5, he explained that the down which grows on the *qishu'in*, of little fine hairs, is called *fiqqis*. For *'Oqazin* (Fruit stems) 2:1, he explained that the down (*keshut*) of the *qishut* refers to the little fine hairs (Ar. *zughb*) on the *faqqous* (Qafah 1963, 1968).

Maimonides, ca. 1200 CE

Maimonides also wrote, in Arabic, a book on pharmacy, *Sharh Asma al-'Uqqar* (Glossary of Drug Names), in Egypt at the end of the twelfth century (Meyerhof 1940; Rosner 1995; Kraemer 2008). This is a lexicon and includes only those items that have synonymous names. The manuscript known today is a copy probably written several decades later by Ibn al-Baytar, who may have also edited the original work. There is an entry for *qitha*, as follows: "It is *as-sawaf* in the language of the Arabs. Its round species is called ____ (omitted by the copyist); *al-faqqus* is the long species." Evidently, the long-fruited *qitha*, the *faqqous*, was much more common as only it is given as synonymous with the *qishut* in the *Commentary on the Mishna*.

'Abd al-Latif, ca. 1200 CE

'Abd al-Latif al-Baghdadi (1162–1231), born in Baghdad, is thought to have conversed with

Maimonides around the year 1200 (De Sacy 1810). Much of the terminology used by 'Abd al-Latif in his *Account of Egypt* is the same as that of Maimonides. He described the *faqqous* as a small *qitha*, not longer than the length of a finger. This description is in contrast to that of Maimonides and modern writers (Issa Bey 1930; Hassib 1938), who defined the *faqqous* as the common long type of *qitha*.

Ibn al-Baytar, ca. 1240 CE

Ibn al-Baytar of Andalusia is best known for his large pharmacological compendium (Leclerc 1883). This work, however, is not considered to be original but almost entirely a copy of that of Al-Ghafiqi (Meyerhof 1940). The citations are exhaustive and the short text on *faqqous* is one of many passages credited to Ar-Razi.

Eshtori HaFarhi, 1322 CE

Eshtori HaFarhi was a scholar of Jewish Law who spent his early years in what are now France and Spain (Luncz 1897). He emigrated to Israel in 1313, stopping briefly in Egypt on the way, and settled in the northern town of Bet She'an. In his book *Kaftor waFerah* (*Button and Flower*), written in Hebrew, he identified the cucurbits appearing in tractate *Kil'ayim* (Crossing) with their contemporary names. Significantly, he wrote that "the *qishut* is *al-faqqous*". HaFarhi, writing in Hebrew about Jewish Law, obviously intended his book for a Jewish audience. Nonetheless, he used the contemporary Arabic word *faqqous* to clarify the meaning of the Mishnaic Hebrew *qishut*. It does not seem possible to determine whether he was familiar with the epithet *faqqous* from Israel, Spain, or Egypt (the last is unlikely, as his stay in Egypt was brief), but as Arabic was the *lingua franca* at the time in all of these places, it appears likely that the *faqqous* was a familiar word over a wide geographical area. In any case, Eshtori HaFarhi assumed that his Jewish audience was familiar with this word.

Anonymous, ca. 1350 CE

An anonymous cookbook in Arabic called *Kanz al-Fawa'id fi Tanwi' al-Mawa'id* was written circa 1350, probably in Egypt (Marin and Waines 1993). The index has listings for various cucurbits. There are two allusions to *faqqous* and five each for *qitha* and *'ajjur*. From descriptions of modern writers (Issa Bey 1930; Hassib 1938), it would seem that *'ajjur* or *'aggur* most often was used in reference to short-fruited *qitha*, that is, adzhur (chate) melons.

Besaychi, ca. 1490 CE

Eliyyahu Besaychi, a scholar from a leading Qara'ite Jewish family initially from Adrianopoli and then Constantinople, wrote a book in Hebrew on Jewish Law that after his death became known as *Adderet Eliyyahu* (Anqori 1966). For tractate *Kil'ayim*, Besaychi discussed a number of crop plants in Hebrew alphabetical order. Under the letter *Qof* he wrote "*Qishut* is called in Arabic *al-faqqun*." Although this Hebrew sentence contains a misspelling, it is clear that Besaychi, writing in Turkey, had made the same identification of the Mishnaic Hebrew *qishut* with the contemporary Arabic *faqqous* that Eshtori HaFarhi had made in Israel approximately 170 years before him.

Conclusions

The Hebrew word *piqqus* was in use from the classical period to the beginning of the medieval period, as is evident from the codices of Jewish Law that were compiled from the second to the sixth centuries in Israel and Iraq (Mekhon Mamre 2010). Subsequently, this word fell into disuse, being replaced by the word *shifshuf*, as indicated in a late twelfth century work of Maimonides, the *Mishne Tora*. The Hebrew *piqqus* was preserved in the Arabic *faqqous*, not for the process of rubbing the hairs off fruit called *qishu'im* (He.) or *qitha* (Ar.), but rather for the fruit itself.

Only a few extant Arabic works antedate the tenth century. This situation is, in large part, responsible for the apparent disconnection in time, 300 years of the Dark Ages, between the last recorded Hebrew use of *piqqus* and the first known recorded Arabic use of *faqqous*. From the early tenth century to the close of the medieval period, however, the *faqqous* were mentioned in documents from across the Islamic Empire, from Iraq to Andalusia. These documents were not concerned with horticulture, but instead with lexicography, religious law, pharmacology,

medicine, diet, and cookery. Specific references to *faqqous* and other melons used when young do not appear in the late medieval Andalusian horticultural guides of Ibn Bassal (Millas and Aziman 1955) and Ibn al-'Awwam (Clément-Mullet 1866). These guides do employ the term *qitha* which, although more generic for immature melons, short or long (Issa Bey 1930; Hassib 1938), from Maimonides' *Commentary* it is apparent that the long-fruited *faqqous* was the more common.

Cucumis sativus is better adapted to temperate climates than *C. melo*. Cucumbers were introduced to Europe after the Roman period (Janick et al. 2007). Given their similarity to chate (adzhur) and snake melons in appearance, flavor, and texture but better adaptation to temperate Europe, cucumbers replaced these cucumber-like melons, relegating them in Europe to the status of a relict crop (Hammer et al. 1986; Laghetti et al. 2008). To the present day, though, the *faqqous*, the snake melons, are widely grown and enjoyed across much of the Arabic-speaking part of the world and warm regions beyond.

Acknowledgments I am grateful to the Haifa University Library, Haifa, Israel for access to its fine, extensive collection of medieval Semitic literature. This research was supported in part by a grant from the Lillian Goldman Charitable Trust (New York).

References

Anqori Z (1966) Eliyyahu Beshaychi: Adderet Eliyyahu. HaMo'aza ha'Arzit shel 'Adat haYehudim haQara'im beYisra'el, Ramla (Israel)

Ar-Razi M (1982) Manafi' al-aghdhiya wa-daf' madarriha [Treatise on foods and correctives]. Dar Ihya al-'Ulum, Beirut, p 229

Burger Y, Sa'ar U, Paris HS, Lewinsohn E, Katzir N, Tadmor Y, Schaffer AA (2006) Genetic variability for valuable fruit quality traits in *Cucumis melo*. Israel J Plant Sci 54:233–242

Burger Y, Paris HS, Cohen R, Katzir N, Tadmor Y, Lewinsohn E, Schaffer AA (2010) Genetic diversity of *Cucumis melo*. Hort Revs 36:165–198, 4 pl. Wiley, New York

Chakravarty HL (1966) Monograph of the Cucurbitaceae of Iraq. Tech Bull 133, Ministry of Agriculture, Baghdad, pp 90–91

Clément-Mullet J-J (1866) Le livre de l'agriculture d'ibn-Al-Awam, vol 2. A. Franck, Paris, pp 205–206

De Sacy S (transl., comm.) (1810) Relation de l'Égypte par Abd-Allatif, médecin arabe de Bagdad. Imprimerie Impériale, Paris, pp 34–35

Fallik E, Aharoni Y, Copel A, Rodov V, Tuvia-Alkalai S, Horev B, Yekutieli O, Wiseblum A, Regev R (2000) Reduction of postharvest losses of Galia melon by a short hot-water rinse. Plant Pathol 49:333–338

Feliks J (1967) Kil'e zera'im weharkava, massekhet kil'ayim [Seed crossing and grafting]. Devir, Tel Aviv (Hebrew), p 49

Feliks J (2005) Talmud Yerushalmi massekhet ma'asrot, perush uvi'ur. [The Jerusalem Talmud tractate ma'asrot, annotated critical edition.]. Bar-Ilan University Press, Ramat Gan, Israel (Hebrew), pp 64–65

Forster ES, Heffner EH (1955) Lucius Junius Moderatus Columella: on agriculture 10–12. Harvard University Press, Cambridge, MA, pp 26–27, 40–43, 159–163

Goldman A (2002) Melons for the passionate grower. Artisan, New York, pp 24–25, 36, 112–114

Hamidullah M (1973) Le dictionnaire botanique d'Abu Hanifa ad-Dinawari: kitab an-nabat, de sin à ya. Institut Français d'Archéologie Orientale, Cairo, p 199

Hamidullah M (1993) The book of plants by Abu Hanifa Al-Dinawari. Bayt al-Hikmat, Karachi, p 528

Hammer K, Hanelt P, Perrino P (1986) Carosello and the taxonomy of *Cucumis melo* L. especially of its vegetable races. Kulturpflanze 34:249–259

Hassib M (1938) Cucurbitaceae in Egypt. Noury & Fils, Cairo, pp 83–97

Issa Bey A (1930) Dictionnaire des noms des plantes. Imprimerie Nationale, Cairo, pp 61–62

Janick J, Paris HS, Parrish DC (2007) The cucurbits of Mediterranean antiquity: identification of taxa from ancient images and descriptions. Ann Bot 100:1441–1457

Jeffrey C (2001) Cucurbitaceae. In: Hanelt P, Inst. Plant Genet, Crop Plant Res. (eds) Mansfeld's encyclopedia of agricultural and horticultural crops. Springer, Berlin, pp 1541–1552

Keimer L (1924) Die Gartenpflanzen im alten Ägypten. Hoffmann & Campe, Hamburg, pp 12–18, 84–87, 170–171, 181

Kirkbride JH Jr (1993) Biosystematic monograph of the genus Cucumis (Cucurbitaceae). Parkway, Boone, NC, pp 1, 80

Kraemer JL (2008) Maimonides: the life and world of one of civilization's greatest minds. Doubleday, New York, pp 164–166, 316–319, 456

Laghetti G, Accogli R, Hammer K (2008) Different cucumber melon (*Cucumis melo* L.) races cultivated in Salento (Italy). Genet Resour Crop Evol 55:619–623

Leclerc L (1883) Traité des simples par Ibn El-Beïthar, vol 3. Imprimerie Nationale, Paris, p 39

Lewin B (1960) The third part of the Kitab al-Nabat of Abu Hanifa ad-Dinawari. Orientalia Suecana 9:131–136

Lieberman S (1955) Tosefta kifshuta. Jewish Theological Seminary of America, New York, pp 666–672

Luncz AM (ed) (1897) Caftor va-pherach par Estori ha-Parchi, 3rd edn. A.M. Luncz, Jerusalem, p 742

Manniche L (1989) An ancient Egyptian herbal. University of Texas Press, Austin, pp 91–96

Marin M, Waines D (eds) (1993) Kanz al-fawa'id fi tanwi' al-mawa'id. Franz Steiner, Stuttgart

Mekhon Mamre (2010) www.mechon-mamre.org. Accessed 22 Oct 2010

Meyerhof M (1940) Šarh asma al-'uqqar, l'explication des noms des drogues, un glossaire de matière médicale composé par Maimonide. Institut Français d'Archéologie Orientale, Cairo, pp 171–172

Meyerhof M, Sobhy GP (1932) The abridged version of "The Book of Simple Drugs" of Ahmad ibn Muhammad al-Ghafiqi. vol 1, Fasc. 1. Al-Ettemad, Cairo

Millas JM Aziman M (1955) Ibn Bassal, Libro de agricultura. Instituto Muley El-Hasan, Tetuan, pp 165–166 (Sp.), 127–128 (Ar.)

Mohamed ETI, Yousif MT (2004) Indigenous melons (*Cucumis melo* L.) in Sudan: a review of their genetic resources and prospects for use as sources of disease and insect resistance. Plant Genet Resourc Newsl 138:36–42

Nasrallah N (2007) Annals of the caliph's kitchens, Ibn Sayyar al-Warraq's tenth-century Baghdadi cookbook. E. J. Brill, Leiden, p 168

Pandey S, Dhillon NPS, Sureja AK, Singh D, Malik AA (2010) Hybridization for increased yield and nutritional content of snake melon (*Cucumis melo* L. var. *flexuosus*). Plant Genet Resour 8:127–131

Paris HS (1989) Historical records, origins, and development of the edible cultivar groups of *Cucurbita pepo* (Cucurbitaceae). Econ Bot 43:423–443

Paris HS (2009) Faqqous: a melon that resembles cucumber—an ancient crop in Israel. Haqla'e Yisra'el 39:65–66 (Hebrew)

Paris HS, Janick J (2008a) Reflections on linguistics as an aid to taxonomical identification of ancient Mediterranean cucurbits: the piqqus of the faqqous. In: Pitrat M (ed) Cucurbitaceae 2008. I.N.R.A, Avignon, France, pp 43–51

Paris HS, Janick J (2008b) What the Emperor Tiberius grew in his greenhouses. In: Pitrat M (ed) Cucurbitaceae 2008. I.N.R.A, Avignon, France, pp 33–41

Pitrat M, Hanelt P, Hammer K (2000) Some comments on infraspecific classification of cultivars of melon. In: Katzir N, Paris HS (eds) Proceedings of Cucurbitaceae 2000, the 7th Eucarpia Meeting on Cucurbit Genetics and Breeding. Acta Hort 510:29–36

Qafah Y (1963, 1968) Mishna 'im perush rabbenu Moshe Ben-Maymon, maqor wetirgum. [Maimonides' Commentary on the Mishna, original and translation.] vol 1, Order Zera'im and vol 6 (part 2), Order Tohorot. Mossad Harav Kook, Jerusalem

Rackham H (1950) Pliny natural history, vol 5. Harvard University Press, Cambridge, pp 460–469

Rosner F (transl., annot.) (1995) Šarh asma al-'uqqar, glossary of drug names. Maimonides Research Institute, Haifa, p 270

Sebastian P, Schaefer H, Telford IRH, Renner SS (2010) Cucumber (*Cucumis sativus*) and melon (*C. melo*) have numerous wild relatives in Asia and Australia, and the sister species of melon is from Australia. Proc Natl Acad Sci USA 107:14269–14273

Walters TW, Thieret JW (1993) The snake melon (*Cucumis melo*; Cucurbitaceae). Econ Bot 47:99–100

Zohary D, Hopf M (1993) Domestication of plants in the Old World. Clarendon Press, Oxford, pp 182–183