



Ginkgo, Apricot, and Almond: Change of Chinese words and meanings from the kernel's perspective

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Research

Abstract

The term /apricot/ is associated with the fleshy part of the fruit in Chinese and European languages, such as English and German, whereas in Chinese /almond/ and /ginkgo/ are associated with a kernel removed from a hard shell and classified as nut-like. Historically, the modern Chinese for ginkgo, commonly translated as silver apricot replacing the older name meaning duck foot, has appeared only since the Song period (960-1279 AD). The apricot, however, has played an important role in Chinese for more than 2000 years. The element apricot which occurs in the contemporary Chinese term for ginkgo is considered to be derived in a technical terminology from the use in Chinese medicine of unshelled apricot seeds. In contemporary Chinese, the term **xingren** (unshelled apricot seed) has changed its meaning which now is unshelled almond seed. This change suggests that silver almond is a more adequate modern translation for ginkgo than silver apricot.

Introduction

Ginkgo biloba L. is widely cultivated due to the ornamental value of the tree, use of its leaves and seeds for food and medicine, and a fascination emanating from its being a living fossil (Botanical systematics & taxonomy 1990:220-222, Lüttge *et al.* 2005:343, Pan 2011:142-143, 253-255, Simpson 2010:145). Ginkgo kernels, after being cooked or roasted, serve as snacks, and ingredients in food or medicine.

The almond tree (*Prunus dulcis* (Mill.) D.A. Webb) is evolutionarily closely related to the apricot tree (*Prunus armeniaca* L.) and classified in the same genus (Lüttge *et al.* 2005:364). Almond kernels serve as snacks and ingredients in baking. The predominantly used cultivars produce sweet kernels, but bitter ones also occur. The fleshy parts

of apricots are eaten when fresh or dried; the unshelled kernel in most cases has a bitter taste and is used as an ingredient in Chinese medicine (Bensky *et al.* 1993, Botanical systematics & taxonomy 1990:277). Particular cultivars that are rarely cultivated produce sweet kernels (Bensky *et al.* 1993).

The focus of our study, however, is not the use of these plants, but their Chinese names. Though many alternative Chinese names exist for each of these three plants, the most common are 銀杏 (**yinxing**) for ginkgo, both 銀杏 (**xingren**) and 扁桃 (**biantao**) for almond (Pan 2011:189-191, 253-255, 325-326), and 杏 (**xing**) for apricot in Contemporary Chinese (below we refer to non-contemporary Chinese as Classical Chinese). The meanings of Chinese plant names has changed over time leading to some confusion, for example in understanding poems in Classical Chinese. A further difficulty is that in Classical Chinese literature produced by the gentry, aesthetic values of plants played a more important role than practical application. The economic importance of a plant is, therefore, some-

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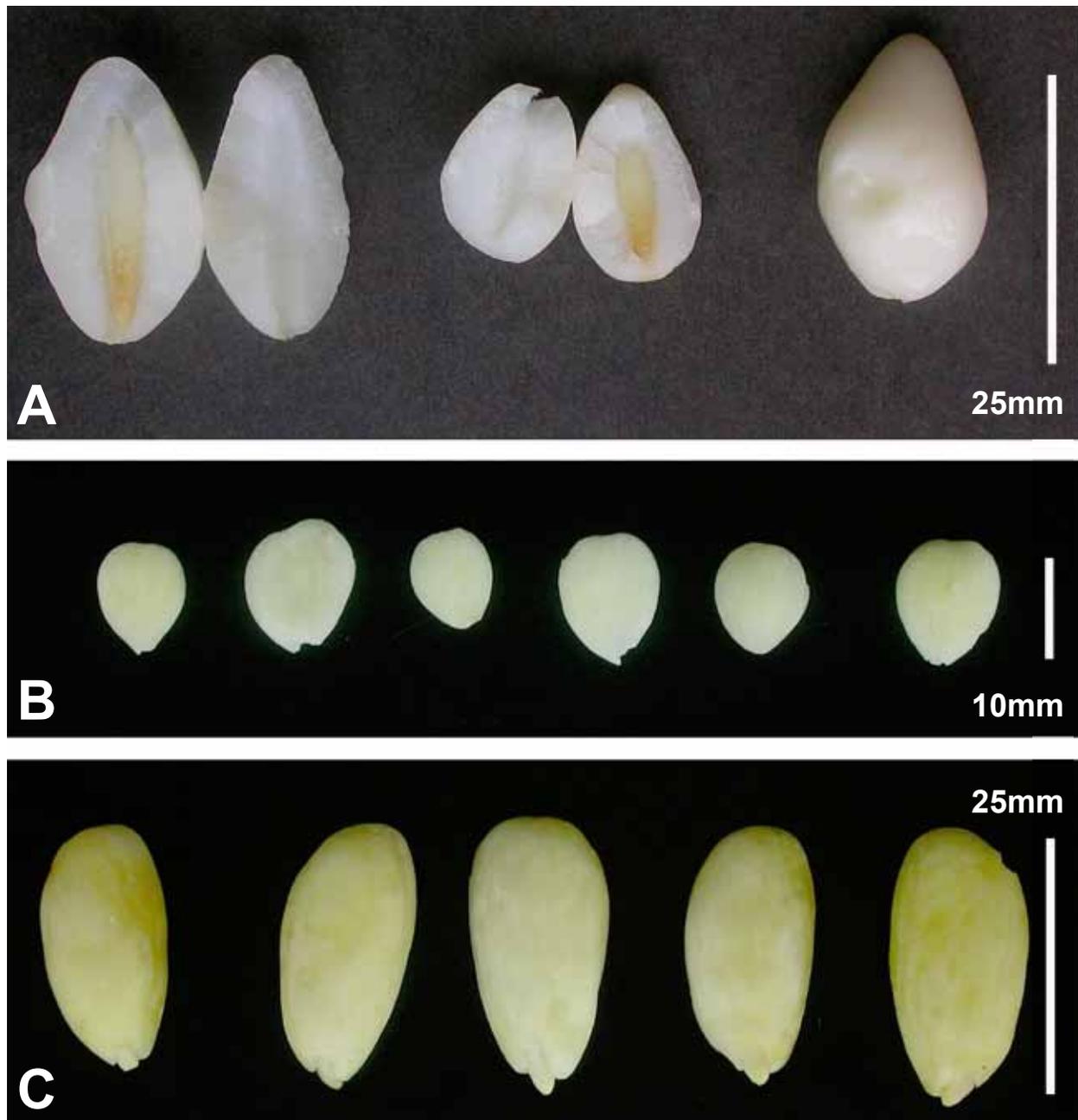


Figure 1. Kernels of ginkgo (A), apricot (B) and almond (C) from Taiwan.

times underrepresented in relation to its aesthetic importance in Classical Chinese literature. Furthermore, in modern English, the same word can have different meanings in everyday life and plant sciences. In an interdisciplinary approach combining botany and linguistics, it is aimed here to correlate the Chinese terms for these plants and their kernels with scientific botanical terminology in order to clarify the changes of names and meanings for a broad audience.

Among the three species being examined their reproductive organs are similar in morphology (Figure 1) and usage, but botanical terminology reveals anatomical differences. Different terms used for fruits and seeds in everyday life and in science are confusing. Figure 2 indicates corresponding common and scientific terms. Ginkgo is a gymnosperm while apricot and almond are angiosperms. Thus what appears as fruit in ginkgo is actually a seed (Botanical systematics & taxonomy 1990:222, Simpson 2010:145), whereas apricot and almond form a true fruit

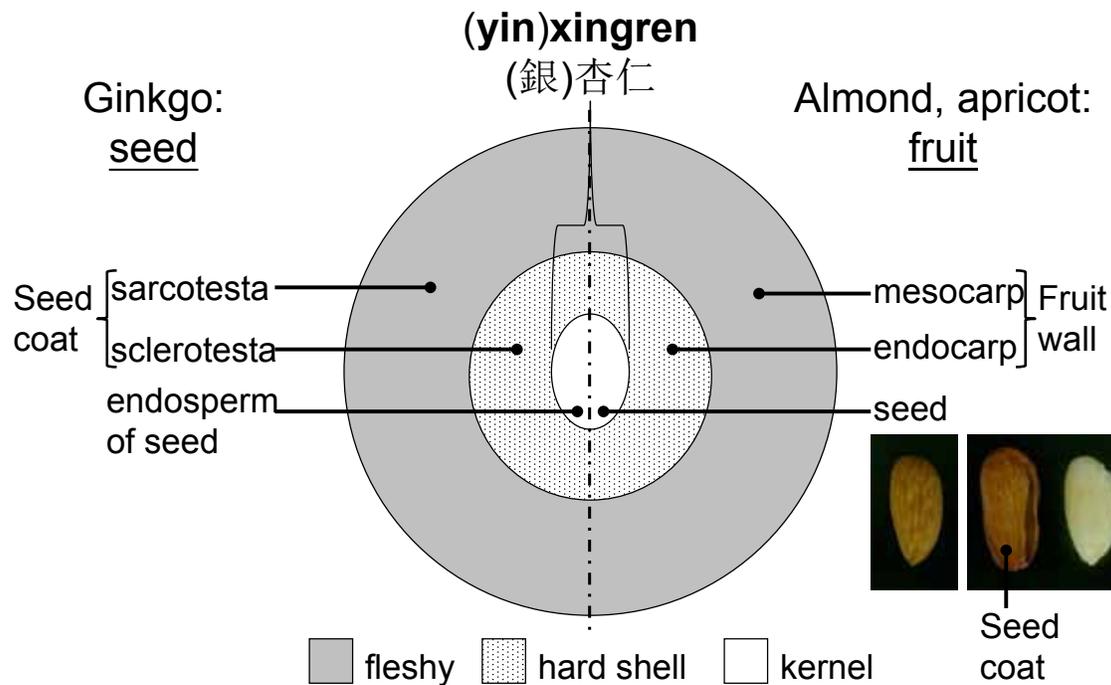


Figure 2. Chinese names for ginkgo and almond/apricot seeds. Simplified schematic showing botanical terminology of a ginkgo seed cross-section (left), and almond/apricot fruit and seed (right). The almond seed is composed of a thin brown seed coat enclosing a white embryo.

containing a seed. The fruit of apricot and almond as well as the outer layers of the ginkgo seed, have, however, something in common in that they appear morphologically similar. These fleshy outer layers are called the sarcotesta in ginkgo and the mesocarp in apricot and almond (Simpson 2010:491). Apricots and almonds both have an inner hard layer, called an endocarp, and in ginkgo the inner hard layer is a sclerotesta. In Classical Chinese, the hard endocarp and sclerotesta with their respective content are called 核 (**he**) and the unshelled kernel 核仁 (**heren**) (Li 2008:330). For simplicity, in the following we use the term kernel for the part that can be unshelled from outer layers, referring to both the seed of almonds and apricots as well as female gametophyte of ginkgo seeds (Simpson 2010:145, 491). The gametophyte is mentioned here only for completeness but not the focus of our analysis. The function of the female gametophyte, however, is important, because after fertilization it contains the nutritive tissue (= endosperm) that nourishes the embryo.

Methods

The main purpose of this work is educational, bridging gaps between: 1) the general public and scientists, 2) East Asian and Western cultures, and 3) Classical and Contemporary Chinese.

Scientific botanical terms are taken from the literature (Botanical systematics & taxonomy 1990, Lüttge *et al.* 2005, Nabors 2007, Simpson 2010). Kaempfer (1712) provides the oldest scientific description of ginkgo, although the modern formal publication dates to Linnaeus (1771).

Classical Chinese literature was written in Chinese until the end of the Qing period (1644-1912 AD). Medical use of plants are taken from the 本草綱目 (**bencaogangmu**) (The Compendium of Materia Medica) (Li 2008) and Youyang Zazu (Duan 1608). Poetry is taken from Qian (2007), Su (2005), and Tang (2009). Jian (2001) is the source of additional idioms.

Contemporary literature referring to Classical Chinese: Previous analyses of Chinese plant names and reports of use of plants in Chinese culture were investigated in order to clarify which has already been known and which of our observations and compilation are new. Such analyses and reports have been published in English (other languages are not considered here) and contemporary Chinese. As Chinese, 白話文 (**baihuawen**) (contemporary written vernacular Chinese) since the end of the Qing period (after 1912 AD) is considered in the present study. Chinese sources used here are the analyses of classical Chinese literature with respect to plant names by Pan (2002, 2011) and the Chinese Mandarin Online Dictionary (1994). These sources are indispensable for under-



Figure 3. Four commercial products made of almonds bought in shops in Taiwan. The illustrations on all packages show unshelled almonds with seed coats. The Chinese labels of the packages end in **xingren** in A and B, and in **xingrenguo** in C and D.

iversity, Academia Sinica, Taipei (HAST). In Figure 1, the focus is placed on the specimens while in Figure 3 on the specimen labels.

Ginkgo

Ginkgo in Chinese literature:

Until the Song period (960-1279 AD), the Chinese term for ginkgo was 鴨腳 (**yajiao**) (duck foot) referring to the shape of the leaves. The kernel was called 鴨腳子 (**yajiaozi**) (duck foot seed). At the beginning of the Song period, the name was changed into 銀杏 (**yinxing**) (silver apricot) for the purpose of presenting tribute to the empire (Li 2008: 345) presumably because 'silver' makes the tribute sound more valuable than the previous duck foot. In other words, it adds auspiciousness to the term. During the Ming period (1368-1644), the Chinese term for the shell-like sclerotesta and inner parts, was 銀果 (**yingguo**) (silver fruit) and 白果 (**baiguo**) (white fruit), which became popular. The Compendium of Materia Medica published during the Ming period lists 銀杏 (**yinxing**) under the name **baiguo** (white fruit) (Li 2008:345). The author states that the change of name from duck foot to **yinxing** occurred during the Song period, referring to the shape resembling a small apricot and to the white color of the kernel. This entry corresponds only to the part of the seed without the fleshy sarcotesta. In Chinese literature, however, the kernel does not play a significant role, but ginkgo is mainly

standing Chinese idioms still in use today, which cannot be understood from the Classical sources alone. English secondary literature includes compilations of the Chinese materia medica by Bensky *et al.* (1993) and linguistic analyses by Laufert (1919), Michel (2005), and Watters (1889).

Specimens of ginkgo, almond, and apricot kernels including their labels were collected in supermarkets, drug stores and convenient stores in Germany and Taiwan, where they are sold as food or medicinal ingredients. These specimens are available in huge amounts worldwide and at low prices, and are well known to the public. Representative photographs were taken of each. Voucher specimens have been deposited in Herbarium of Research Center for Biodi-

praised for its green foliage turning golden-yellow in autumn and, to a lesser degree, for the yellow outer part of the seed (Pan 2011:143, 189, 253). Just as the poem 謝濟之送銀杏 (Xie Ji-Zhi **song yinxing**) (Thanks Ji-Zhi for the **yinxing** as a present) by 吳寬 (Wu Kuan) describes, 錯落朱提數百枚, 洞庭秋色滿盤堆 (**Cuo luo zhu ti shu bai mei**, Dongting **qiu se man pan dui**) (Hundreds of leaves of ginkgo fall down, autumn scenery is all around the Tungting Mountain) (Qian 2007).

First description of ginkgo in a European language:

The scientific name *Ginkgo* is derived from the Japanese pronunciation of the Chinese characters, erroneously published by Kaempfer (1712) as ginkgo instead of **ginkyo** or another more adequate transliteration (Michel 2005). Kaempfer was, however, aware of the common use and meaning of this name in Japan, because he classified this genus as "*arbor nucifera folio Adiantino*" (a nut-bearing tree with leaves like maidenhair fern). He compared the whole fruit with that of the plum tree (*Prunus domestica* L. var. *damascena* Ser.) and the inner part composed of the hard shell (sclerotesta) enclosing the endosperm with the stone (the endocarp enclosing the seed) of apricot and the endosperm itself with the sweet almond:

"figura lapidis Apricotii, putamine ligneo tenui, fragili, albicante; nucleum laxe continens album, non dividuum, amygdali dulcedinem cum austeritate exhibens" (with the shape like the stone of apricot, with thin, fragile, whitish wooden shell, containing a loose white, undivided kernel revealing the sweetness with bitterness of almond).

Kaempfer made the adequate comparisons of the hard sclerotesta with the endocarp of apricots and the endosperm with unshelled almonds.

Secondary translation of ginkgo as silver apricot in English:

The commonly used translation of the Chinese characters 銀杏 (**yinxing**) as silver apricot cannot be traced back to the description by Kaempfer, but must have been invented later. The etymology for **yinxing** referring to the shape of a small apricot and to the white color of the kernel was applied in the **bencaogangmu** and suggests this translation. Though this translation is literally correct, with **yin** meaning silver and **xing** meaning apricot, it is misleading because in Chinese and English we usually associate an apricot with the yellow fleshy fruit. What appears silver-colored in ginkgo is not the fleshy part of the outermost layer of the seed, the sarcotesta, which in color and consistency is similar to the exo- and mesocarp of apricots, but the white hard sclerotesta. For this part of the ginkgo (including the sclerotesta and the inner tissues) there are synonymous Chinese terms such as 銀果 (**yingguo**) (silver fruit) and 白果 (**baiguo**) (white fruit). The part inside the sclerotesta, the endosperm, is unshelled, almond-shaped, not fleshy, and white to yellow, which is called 銀杏仁 (**yinxingren**). In the Chinese Mandarin On-

line Dictionary (1994), **yinxing** is expressly referred to the unshelled kernel and not the whole seed of ginkgo. 杏仁 (**xingren**) in Classical Chinese refers the unshelled, bitter seed of apricots used for medicine. In Contemporary Chinese, however, this term refers to the sweet seed of almond fruit.

Apricot

The apricot or 杏 (**xing**) has been cultivated for more than 2000 years in China (Pan 2011:190). It is said that Confucius used to give his teachings below apricot trees. Because of this tradition, 杏壇 **xingtán** (apricot-platform), became a metaphor for a place for academic lectures (Chinese Mandarin Online Dictionary 1994, Pan 2002). The metaphor derived from Zhuangzi 莊子 (Jian 2001), The Fisherman (**yufu**) 漁父: 孔子遊乎緇帷之林, 休坐乎杏壇之上 Kongzi **you hu** Ziwei **zhi lin**, **xiuzuo hu xingtán zhi shang** (Confucius travelled in the Ziwei forest and rested on the apricot platform). In Classical Chinese literature, metaphors about the fruit of 杏 (apricots) refer to the round shape, juicy consistency and yellow color (Pan 2011:208-209). Human eyes are described as round when referring to **xing** with the meaning of round, fresh, juicy apricot fruits, whereas in English almond-shaped eyes refers to the elongated and angular shape of almond kernels. Though in both, closely related fruits are used for praising the beauty of human eyes, the meaning is very different, because the underlying aesthetics differ. A Chinese idiom refers to this shape of eyes: 杏眼圓睜 (**xing yan yuan zheng**) (apricot-eye-round-open; the appearance of a girl when angry and wide-eyed). As 杏黃 (**xinhuang**) (apricot yellow) in Chinese, apricot in particular has also become a widespread color term in English, referring to the outer parts of the fruit.

In Chinese literature, the apricot has always been classified as a fleshy fruit rather than a nut-like fruit. One exception is the use of the unshelled almond-like seed of apricots and related species in traditional Chinese medicine, which are often called 苦杏仁 (**kuxingren**). Another exception is the use of sweet seeds of certain apricot cultivars in Western and Central Asia as food. Bitter and sweet kernels of different cultivars of the apricot can all be comprised under 杏仁 (**xingren**) in Chinese medicine (Bensky *et al.* 1993). But this special usage is not widely known and is not commonly referred to in English or Chinese languages, in which the apricot is exclusively associated with the outer parts of the fruit. Only one metaphor, 杏林 (**xinglin**) (apricot grove) refers to the medical use of the apricot kernel (Pan 2002), which corresponds to 杏林高手 (**xinglin gaoshou**) (a skillful physician as the highly skilled hand of the apricot grove).

The apricot is also mentioned in Chinese literature in reference to the flowering with masses of red to pink sepals and petals. The flowers are often associated with spring, the beauty of nature, gardens, and of young women (Pan 2011:189-191), as it is depicted in the following Chinese

idiom: 紅杏出牆 (**hong xing chu qiang**) (red-apricot-outside-wall; a married woman having an affair) (see the discussion about flowers in Hsieh *et al.* 2005). Poems in Classical Chinese also refer to the beauty of the apricot flowers, such as: 桃腮杏臉, 嫩英萬葉, 千枝綠淺紅深 (**tao sai xing lian, nen ying wan ye, qian zhi lu qian hong shen**) (The sight of peach and apricot trees with millions of branches interlaced with red flowers and green leaves interwoven) (written by Wang Shen in the Song period entitled: Flowers bloom and Qin Yuan became like spring) (Tang 2009) and: 偶作小紅桃杏色, 閒雅, 尚餘孤瘦雪霜姿 (**Ou zuo xiao hong tao xing se, xian ya, shang yu gu shou xue shuang zi**) (Sometimes, I write about the elegance of red apricot which shows its slim and lonely shadow in the snow) (written by Su Shi entitled Ding Fen Hill, red plum) (Su 2005).

Almond

Almond trees can be confused with apricot trees in the absence of the fruit. In almonds, the outer parts of the fruit remain rather green and thin in contrast to the fruit of apricots. Laufert (1919) found a description in the Youyangzazu (Duan 1608:151) from the Tang period (618-907 AD) under the name 扁桃 (**biantao**), which indicates that the almond was known early in China and perhaps even cultivated during this period. The early transcription was 婆淡 (**podan**) was derived from the foreign word **badam** used for almond in Persian and other languages (Laufert 1919). Pan (2011:325) stated that the almond tree was introduced to China only in the Song period, first under the name 巴欖 (**balan**). The word later changed to 巴旦杏 (**badanxing**) (Li 2008:330, Pan 2011:325), probably due to the similarity of morphology and use of the kernel to those of apricots. 扁桃 (**biantao**) also continued to be commonly used for the tree. The almond does not occur in Classical Chinese literature according to the lack of citations in Pan (2011). Almond is considered as nut-like fruit, which refers to the unshelled seeds, namely almond or 杏仁 (**xingren**) in Contemporary Chinese. The meaning of this term has been broadened, first being used only for the kernel of apricots in Chinese medicine and now for the kernel of almonds. Watters already stated in 1889 that the Chinese “have mixed up the foreign almond with their native apricot”. This observation is in contrast to Laufert (1919) as Watters’s statement (1889) appears more correct since when buying almonds in any market, almonds are depicted on the package and labeled as **xingren** (Figure 3).

Sometimes 果 (**guo**) (fruit) is included in the name, as 杏仁果 (**xingrenguo**). We assume that this very recent language change has occurred out of a commercial consideration that **guo** gives an impression of better flavor or that the contents are more nutritious. This is an application of the popular linguistic device known as *totum pro parte*. A mushroom that is frequently cultivated, *Pleurotus eryngii* (DC.) Qué., is called 杏鮑菇 (**xingbaogu**) (almond-aba-

lone mushroom) because of its sweet almond-like taste, which is not in reference to the bitter taste of apricot seed. This gives further indirect support for the change of meaning. A simplified summary of these changes with a focus on the kernels is illustrated in Figure 4.

In addition to the lexical migration, we also found a phonological analogy of the Chinese pronunciation and character for **xing** in order to name another plant. Lotus-like water plants of the genus *Nymphoides* were called 荇菜 (**xingcai**) in Classical Chinese (Pan 2011:41, 221). The leaf petioles are used as vegetables. According to our observation this vegetable is not commonly used. Tracing back the name changes for this plant is, therefore, even more difficult than for ginkgo. In Contemporary Chinese, these plants are called **xingcai** with the same pronunciation, but the element 荇 (**xing**) has been replaced by 荇 (**xing**) (Pan 2011:41, 221). The character 荇 (**xing**) is composed of 杏 as the phonetic compound topped by the radical 艹 indicating that the word means a herbaceous plant. There is no close morphological similarity between *Nymphoides* vegetable with seeds or fruits of apricot, but only the pronunciation of their names is identical. Perhaps people gradually associated the pronunciation of the rarely used character 荇 with the more commonly used 杏 by a kind of folk etymology and created the character 荇. In contrast to the radical 行 indicating movement, 杏 somehow also indicates a connotation with food.

Conclusions

Though ginkgo and apricot have been cultivated in China for more than a thousand years, their practical uses for food and medicine are rarely reflected in Classical Chinese texts. The authors of these texts focus on the aesthetic values of these plants. For this reason, there is a discrepancy between the use of plants in Classical Chinese literature, such as poems, and in daily life. References to the beauty of ginkgo and apricot in Classical Chinese literature are numerous, but they do not tell us anything about their practical use. The practical use of the nut-like kernels is, therefore, more difficult to trace back. In Classical Chinese literature, ginkgo is mainly praised for its foliage particularly in autumn and, to a lesser degree, for the yellow outer part of the seed. For the apricot, the characteristics of the outer part of the fruit are used to describe female beauty; in addition the flowering with masses of red to pink sepals and petals is associated with spring, beauty of nature, gardens, and of young women (Pan 2011). The almond was introduced comparatively late into China and did not add new aesthetic connotations in addition to the known and similar apricot, cherry, and peach, which were already well-established in Classical Chinese texts. Furthermore, the almond does not play any significant role there (according to Pan 2011).

For centuries, the original name used for ginkgo was 鴨腳 (**yajiao**) (duck foot) referring to the shape of the leaves.

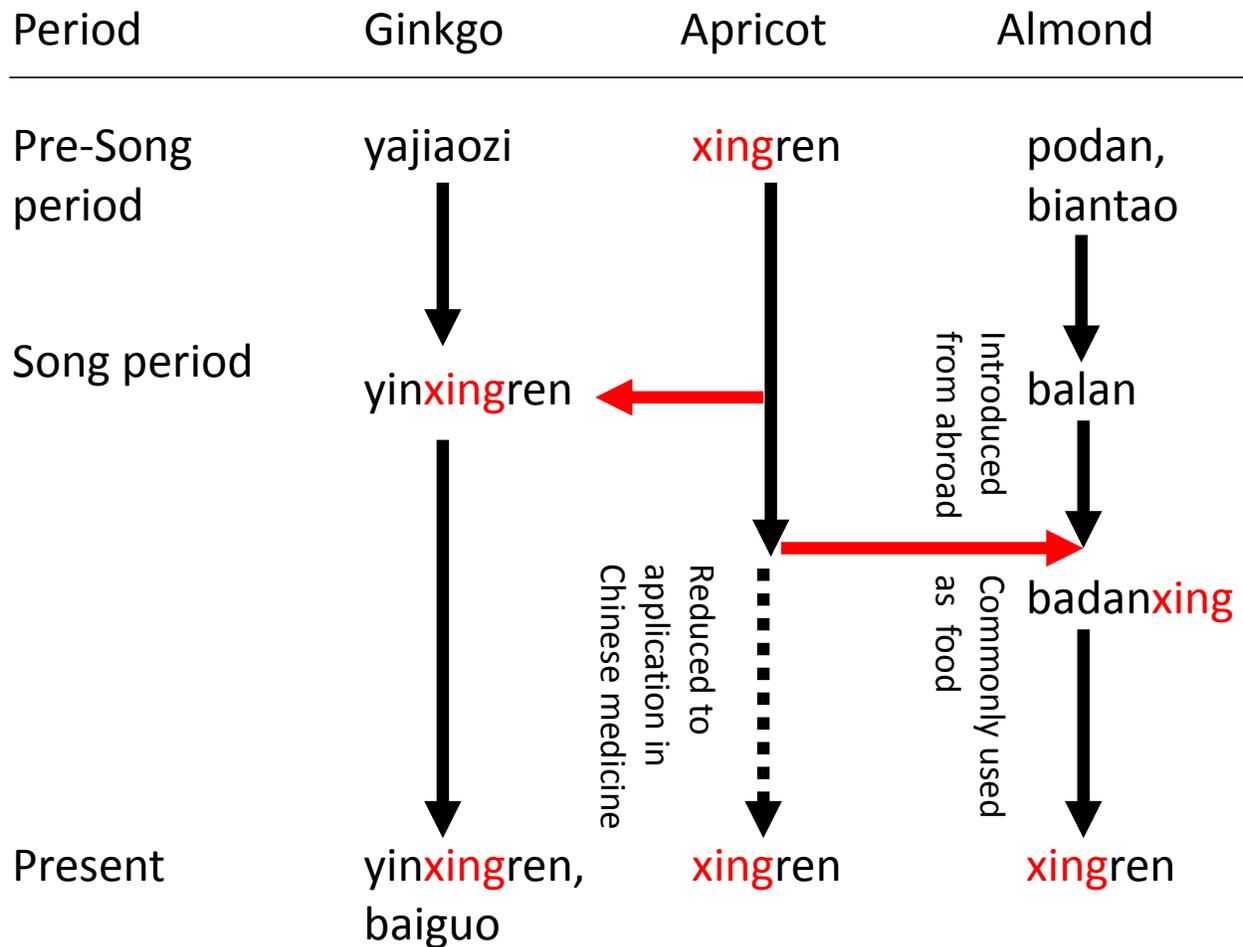


Figure 4. Change of Chinese names for the “kernels” of ginkgo, apricot, and almond in different periods. Lexical migrations of the element **xing** from apricot to ginkgo and almond are indicated by red color.

Only during the Song period, when the almond was introduced as 巴旦杏 (**badanxing**) and 杏仁 (**xingren**), was the ginkgo name 鴨腳 (**yajiao**) replaced by the modern 銀杏 (**yinxing**), as it was regarded as a nut-like fruit. The element **xing** shows a lexical migration to the Chinese terms for ginkgo and almond. We think that **xing** in **yinxingren** and **badanxing** are etymologically derived from **xingren** of the apricot in Chinese medicine, though evidence for this hypothesis was not found in Chinese literature. We believe that the reason for this lack of evidence is that the authors were scarcely interested in the practical use, but mainly the aesthetic properties of plants. The Chinese morphological category and usage as nut has been applied to apricot seeds, almond seeds, and the inner part of ginkgo seeds. Furthermore, what they have in common is a kernel unshelled from a hard shell embedded in soft tissue. Apricot is, however, in literature and everyday life generally considered a fleshy fruit except for a specialized use in Chinese medicine. The meaning of **xingren** for apricot seeds has been replaced predominantly by the meaning almond seeds in Contemporary Chinese. In the Chinese Mandarin Online Dictionary (1994), the un-

shelled kernel of the ginkgo seed and not the whole seed is expressly named as **yinxing**: The unshelled kernel resembles **xing**, with white color, can be eaten. 核仁似杏, 色白, 可食 (**heren si xing, se bai, ke shi**). We, therefore, suggest abandoning the widespread literal translation of ginkgo as silver apricot in favor of a modern and less misleading translation as silver almond.

Acknowledgments

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