Chapter 14

Chamomiles in Spain
The Dynamics of Plant Nomenclature

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'*En summa, es la mançanilla excellente y muy familiar remedio, contra infinitas enfermedades, que affligen el cuerpo humano*'
(In sum, chamomile is an excellent and very familiar remedy against infinite illnesses that afflict the human body)
(Laguna 1555: 361)

Introduction

Historically, the folk botanical category known as *manzanilla* or *camomila* in the languages spoken in Spain referred only to *Matricaria recutita* and a few very similar species. In a rather exceptional example of dynamic consolidation in European ethnobotanical knowledge, this category has grown to include more than sixty similar species (Casermeiro et al. 1995; Álvarez 2006). These include some of the most popular digestive Spanish beverages (e.g., *Matricaria recutita*, *Matricaria aurea* and *Chamaemelum nobile*), their substitutes (e.g., *Helichrysum stoechas*, *Santolina chamaecyparissus*) and adulterants (e.g., *Tanacetum parthenium*, *Anacyclus clavatus*). They are all used in a similar way, as digestive herbal teas, and most of them are members of the daisy family, Asteraceae, with their flowers arranged in flower heads; that is, densely packed clusters of many small flowers, commonly surrounded by long, strap-like flowers termed *ligules*.

How has this happened? To what extent has a common morphology interacting with a common utility among so many species contributed to such a large folk-generic complex? What other factors might be at work? Are ecological, economic or cultural changes in the use of chamomiles

driving the extension of the category to other species? In conjunction with evidence from botany and economic history, the names themselves may provide valuable evidence to answer these questions. The existence of binomials, with translatable descriptive terms, may give us clues as to why certain species have been classified together. For instance, appreciative or pejorative epithets can denote whether the plants are valued or not, and may be one of the underlying criteria that people use to group a variety of species together under one label. While the meaning of names shared by different species often reflects underlying cultural criteria of local importance, such polysemy can also derive from misidentifications or intentional substitutions, as when commercial species are adulterated by less valuable but more accessible species (Pardo-de-Santayana, Blanco and Morales 2005; Akerreta et al. 2007).

In order to better understand the meaning and historical evolution of this folk category, we reviewed and analysed more than forty-eight studies (see Table 14.1), for information on the historical and popular uses and names of plants called *manzanilla/camomila* in Spain (e.g., Pardo-de-Santayana, Blanco and Morales 2005; Álvarez 2006; Pardo-de-Santayana, San Miguel and Morales 2006). Our findings are detailed in the sections to follow, but to preview our conclusions, we argue that *manzanilla/camomila* is a complex folk-generic composed of:

1. A small number of highly valued and widespread prototypical species that have little variation in vernacular names.
2. A few highly valued, but ecologically restricted species that tend to have local vernacular names.
3. A large number of chamomile substitutes with a great variety of local names.

There is evidence from old botanical texts, herbals and other literature from across Europe that this folk generic has always been variable and expanding. In Spain and elsewhere the expansion of the category appears to have been driven by the discovery of morphologically similar species, due to increased travel, commerce and scientific study, and the inclusion of morphologically similar, but functionally dubious, substitute species, due to the expanding recognition of chamomile as a cure-all medicinal plant.

Chamomile and Chamomiles

The word *chamomile*, like *camomila* in Spain and Portugal, *camomilla* in Italy, *camomille* in France, and *kamille* in Germany, comes from the Latin *chamaemelum*, which in turn comes from the Greek *chamaimelon*, which means 'ground-apple' (*chamai*=on the ground; *melon*= apple). The name

may well have originated from the herb's strongly aromatic and distinct scent of apples. Additionally, *chamomile* is called in Spanish *manzanilla*, that is, little apple (*manzana*=apple, *illa*=diminutive suffix). This term seems to be a translation of the original Greek name, *chamaimelon* (Covarrubias 1611). The Portuguese word *macela* is likely to have the same origin (*maçã*=apple, *ela*= diminutive suffix) (Feijao 1960–1963). In Spanish, *manzanilla* and *camomila* are synonyms, labelling the same category of botanical species.

While chamomile is a generic name that can refer to many herbs, it mainly denotes the so called 'true chamomile', common chamomile or German chamomile, *Matricaria recutita*, although due to a number of inaccuracies concerning its nomenclature, it is known by many other synonyms, such as *Matricaria chamomilla* and *Chamomilla recutita*. *Matricaria recutita*, a member of the daisy family (Asteraceae), is native to southern Europe, north Africa, and west, southwest and central Asia, but after centuries of cultivation and breeding on a wide scale, it has been naturalized in many other regions.

Matricaria recutita is one of the most widely used medicinal herbs in the world. It is not only highly popular as a home remedy, but is also recommended in allopathic medicine and of great interest for the pharmaceutical industry. Not surprisingly, it is one of the species of which a higher number of pharmacological, experimental and clinical studies are available (Franke and Schilcher 2005).

Its use dates back at least to ancient Greece and Rome. Hippocrates (460–377 BC) and Dioscorides (AD first century), for instance, described the plant and some of its uses. During the Renaissance it was so popular that it was stated that 'there is no herb in medicine for people being more usual than chamomile flowers because they are used against nearly all kinds of ailments' (Bock 1539). Modern scientific experiments have corroborated most of the virtues that people attributed to them. In fact, chamomile appears in a significant number of internationally known pharmacopoeias (Schilcher 2005). Chamomile, used internally or externally, contains volatile oils, flavonoids and other therapeutic substances (Font Quer 1962; Schilcher, Imming and Goetersal 2005). These produce anti-inflammatory, anti-spasmodic, choleretic and cholagogic activity, all of which help to improve digestive functions as well as having sedative and relaxing effects. Nowadays it is sold both as a foodstuff (for preparing domestic herbal teas) and as a drug, and is mainly consumed as a digestive and relaxant infusion.

However, the term *chamomile* is ambiguous since it refers to many other species (see Appendix 14.1). *Chamaemelum nobile* (syn.: *Anthemis nobilis*), similar in properties and applications to *Matricaria recutita*, is also highly appreciated and therefore also included in many pharmacopoeias (Schilcher 2005). It is only native to western Europe (British Isles, France, Portugal and Spain), northwestern Africa, Madeira and Azores, although cultivated and naturalized in many other regions. Usually known as Roman chamomile, although unknown to the Romans and Greeks, the

name seems to have originated during the sixteenth century, perhaps because the plant was already cultivated around Rome at this time. It is also known as English chamomile, since it is a native English species.

The idea of chamomiles as a group of species or a generic class of plants appeared as early as the ancient Greek and Roman periods. Dioscorides (AD 65: III, 148) stated in his *De Materia Medica* that there are three species of *Anthemis* (chamomile): *Leucanthemum*, a name that indicates its white ligules, *Chrysanthemum*, a term that points out its golden yellow ligules, and *Eranthemon*, a Greek name that means the flower that blooms in spring. All of them are daisy-like plants, that is, ligulated species of the Asteraceae family.

Over centuries and across Europe the generic category appears to have expanded to include more botanical species; thus the German physician Tabernaemontanus (1522–1590) and the Spanish Botanist Quer (1695–1764) distinguished six and five different taxa of chamomile respectively (Tabernaemontanus 1664; Quer 1762–1764). Both Tabernaemontanus and Quer relate the 'common chamomile' (*gemeine Chamillenblum* and *manzanilla común*), to what Dioscorides called *Leucanthemum.* Based on their botanical descriptions it seems obvious they are referring to *Matricaria recutita.* To this they contrast the 'Roman chamomile' (*Römisch Chamillen* and *manzanilla romana*), which they clearly identify as *Chamaemelum nobile.* A third species mentioned by Tabernaemontanus was the 'full Roman chamomile' (*Gefüllt Römisch Chamillen*), a variety of *Chamaemelum nobile* with more ligulated flowers, developed by medieval herbalists (Franke 2005).

The *Chrysanthemum* of Dioscorides is likely to be the 'yellow chamomile' (*Geel Chamillen*) of Tabernaemontanus, probably referring to *Anthemis tinctoria* (Franke 2005). According to Manniche (1989), this is the chamomile that Egyptians knew and greatly esteemed. Dioscorides wrote that the third chamomile, *Eranthemon*, has red ligules, which seems to refer to the 'red chamomile' (*Rothe Chamillen*) of Tabernaemontanus. It has been suggested that this name refers to *Adonis* (*A. aestivalis* L. or *A. flammea* Jacq.) (Franke 2005), a genus in the Ranunculaceae. However, this seems unlikely since Dioscorides says that all chamomiles have the typical yellow button of the flower heads of daisies, not found in Ranunculaceae.

The other species mentioned by Tabernaemontanus is the 'full Roman chamomile of another genus' (*Gefüllt Römisch Chamillen anderer Gattung*), whose botanical identity remains a mystery. Three other types of medicinal chamomiles were mentioned by Quer: 'Delicate chamomile' (*manzanilla fina*) clearly refers to *Matricaria aurea*, 'stinking chamomile' (*manzanilla hedionda*) is probably *Anthemis arvensis* or *Anthemis cotula*, and 'scentless chamomile' (*manzanilla inodora*) could refer to *Anacyclus clavatus* or *Tripleurospermum inodorum* (syn. *Matricaria inodora*, *Matricaria maritima*).

The similarities between the botanical species of *Matricaria*, *Chamaemelum*, *Anthemis* and several other related genera may have led

to the extension of the label 'chamomile' in many European languages to many other species, such as *Matricaria dioscoidea*, *Chamaemelum mixtum* and *Chamaemelum fuscatum*. Not all of these related species share the same medicinal qualities, so this expansion of the class of 'chamomiles' could have resulted in misidentifications, substitutions and adulterations of the collected plant and its medicinal products. We also speculate, below, that perhaps this semantic expansion was in part driven by the marketing of chamomiles as an important, 'cure-all' medicinal product. Once a demand was created for something called *chamomile*, in an area where no one was sure what this referred to, then it would have been easy for plant collectors to make mistakes in identification or herbalists or vendors to unintentionally or even intentionally mislead consumers.

Spanish Chamomiles

Our survey of the literature showed that the Spanish terms *manzanilla* and *camomila* refer to sixty-two species across Spain, but only thirty have been considered in modern ethnobotanical studies (Álvarez 2006). These popular generics include mainly ligulate *Anthemidae* (Asteraceae) of the genera *Matricaria*, *Chamaemelum* and *Anthemis.* They include also other Asteraceae without ligules, such as *Achillea*, *Artemisia*, *Helichrysum* and *Santolina* (see Table 14.1), and members of other families, including Caryophyllaceae (*Herniaria glabra*, *Paronychia argentea*), Convolvulaceae (*Convolvulus boissieri*), Dipsacaceae (*Pterocephalus spathulatus*), Geraniaceae (*Erodium foetidum*) and Apiaceae (*Bupleurum falcatum*) (Villar et al. 1987; González Tejero 1990; Mesa 1996; Guzmán Tirado 1997; Fajardo et al. 2000; Fernández Ocaña 2000).

The term *manzanilla* has been used in Spain for a very long time. As early as the twelfth century, the Jewish rabbi, physician and philosopher Maimonides (1135–1204) mentioned that chamomile was called *masanilah* or *masanalah* in Al-Andalus (Navarro and Hernández Bermejo 1994). Some decades later, Ibn Al-Baytar (c. 1197–1218), an Andalusian Arab who was one of the most influential Medieval writers on botany and pharmaceuticals, also refers to *massanallah*, a synonym of *jamamilun* (Greek) and *babunay* (Arab) (Navarro and Hernández Bermejo 1994).

In Spanish, *manzanilla* prevails over the term *camomila*, which according to Covarrubias (1539–1613), the author of one of the first and most influential Spanish dictionaries (Covarrubias 1611), was the name used by the 'barbarians' (a pejorative term for referring to foreign people). At this time, *manzanilla* was not only used to refer to *Matricaria recutita* or *Chamaemelum nobile*, but also to their substitutes. L'Écluse (1526–1609), a Flemish botanist who travelled around Spain collecting and describing plants, stated that people from Murcia used *manzanilla* for the plant that

Table 14.1. Most important species called *manzanilla*, *camomila* or derived names in Spain

Asteraceae	Popular names	Popular uses
Achillea millefolium	Manzanilla (4, 24, 47), manzanilla romana (12, 23, 38), manzanillón (23, 42)	Digestive (17, 33, 37, 38, 42, 47), analgesic, vulnerary (4, 38, 47), enhance blood circulation (38, 42, 47), bronchial disorders, emmenagogue (47, 38), haemorrhoids, diuretic, headache, fever, laxative (47), diarrhoea (38)
Achillea odorata	Manzanilla de la sierra (30), manzanilla real (41)	Digestive (30), vulnerary (41)
Achillea ptarmica	Camamilla, camamilla de muntanya, camamilla de Rojà (40)	Digestive, intestinal ache, diarrhoea, laxative, anti-catarrhal, sedative, heart disorders, vulnerary, eye infections (40)
Anthemis arvensis	Manzanilla (10, 12, 18, 38, 43, 47), manzanilla basta (1), manzanilla bastarda (10, 12, 17, 18, 35, 48), manzanilla silvestre (10, 12, 18), manzanilla borde (10, 17, 18, 45)	Digestive and stomach ache (1, 3, 10, 14, 18, 43, 45, 47), laxative (9)
Artemisia granatensis	Manzanilla de la sierra (17, 20), manzanilla de Sierra Nevada (11, 17)	Digestive (17, 20)
Chamaemelum nobile	Camamilla romana (9, 17), camomila (27), camomila romana (17, 19), kamamila (1), manzanilla (1, 2, 3, 4, 7, 11, 19, 22, 23, 36, 41, 38, 42, 43), manzanilla amarga (4, 43, 46), manzanilla de campo (38, 43), manzanilla de monte (1), manzanilla de Urbasa (1), manzanilla de Aralar (1), manzanilla fina (1), manzanilla romana (11, 12, 17, 19, 25, 43)	Digestive, carminative (1, 2, 3, 4, 7, 9, 19, 23, 41, 36, 38, 41, 42), eye infections (2, 4, 19, 36; 38, 7, 42), laxative (4, 19, 38, 42), relaxant (4, 36, 42), sore throat (4, 36), hepatoprotector (38), aperitif (2) headache (23), emmenagogue, earache (38)
Helichrysum italicum	Manzanilla basta (20), manzanilla borde (13, 19), manzanilla silvestre (44), mançanella borda, (32), mançanilla del bosc (37)	Digestive (19, 32, 37, 44), toothache (20)

Table 14.1 *continued*

Helichrysum stoechas	Camamilla (9), mançanilla (17, 29, 37), manzanilla (1, 5, 6, 11, 32, 38, 46), manzanilla basta (4, 11, 12, 18, 46), manzanilla bastarda (11, 12, 17), manzanilla dulce (1), manzanilla fina (1), manzanilla de monte (41, 46), manzanilla de pastor (6, 11, 12, 17), manzanillón (12, 41)	Digestive, intestinal ache (1, 20, 22, 32, 37, 38), anti-catarrhal (6, 38, 41), wounds (32, 41), tooth ache (41), anti-helmintic (38)
Matricaria aurea	Manzanilla (22, 43), manzanilla fina (11, 17, 43)	Digestive (22, 43, 47), eye infections, laxative (2)
Matricaria dioscoidea	Manzanilla falsa (42), manzanilla silvestre (38), manzanillón (12), manzanilla dulce (43), mencenilla (3)	Digestive (3, 38, 43)
Matricaria recutita	Camamilla (1, 8, 9, 16, 17, 32, 33, 37), camamilla dolça (40), camomila (12, 17, 43), manzanilla (3, 4, 5, 6, 7, 11, 12, 14, 15, 16, 17, 20, 21, 22, 23, 28, 30, 31, 32, 34, 36, 39, 43, 45, 46, 47), manzanilla buena (15, 45), manzanilla dulce (4, 5, 14, 21, 32, 39, 43, 46)	Digestive, intestinal ache (1, 3, 4, 5, 6, 9, 14, 31, 33, 40, 41, 45), eye infections (3, 4, 7, 9, 14, 33, 39, 41), anti-cattarrhal (9, 22, 33), laxative (9, 33, 39), sedative (9, 14, 33), antacid (9, 39), emmenagogue (14, 33), hepatoprotector, emetic (9, 33), earache (33, 40), depurative, bad breath (41), headache, haemorrhoids, vulnerary (33)
Santolina chamaecyparissus	Camamilla de botó (40), camamilla de botó groc (40), camamilla de l'hort (40), camamilla de muntanya (11, 29, 37), camamilla de parets (40), mançanilla (29, 32), manzanilla (1, 11, 16, 17, 32, 47), manzanilla amarga (13, 14, 34, 41), manzanilla basta (1), manzanilla de burro (1), manzanilla de monte (1), manzanilla del campo (14, 41)	Digestive, intestinal ache (1, 14, 16, 19, 20, 32, 34, 37, 40, 41, 47), hepatoprotector (16, 33), sedative (1, 40), anti-catarrhal, anti-rheumatic, vulnerary, anti-helmintic (41), headache, depurative, women's hygiene (1), eye infections (40)
Santolina oblongifolia	Manzanilla de Gredos (17, 26), manzanilla dulce (26)	Digestive (26, 17)
Santolina rosmarinifolia	Manzanilla fina (11), manzanilla del campo (22)	Digestive (22)

Table 14.1 *continued*

Tanacetum parthenium	Camamila de los huertos (11, 17), camamilla (40), camamilla amargant (40), camamilla borda (9, 11, 17, 40), camamilla de jardí (8, 29), manzanilla (11), manzanilla amarga (1), manzanilla brava (12), manzanilla de huerta (1), manzanillón (12), manzanillota (24)	Digestive, stomach and intestinal ache (1, 40, 9, 47), purgant (9, 47), anti-catarrhal, depurative, hepatoprotector (9), anti-helmintic, relaxant (47), diarrhoea (40)

1 Akerreta et al. 2007; 2 Barandiarán and Manterola 1990; 3 Blanco 1996; 4 Blanco 1998; 5 Blanco 2002; 6 Blanco and Cuadrado 2000; 7 Blanco and Diez 2005; 8 Bonet 1991; 9 Bonet 2001; 10 Casana 1993; 11 Colmeiro 1885–1895; 12 Esgueva 1999; 13 Esteso 1992; 14 Fajardo et al. 2000; 15 Fernández Ocaña 2000; 16 Ferrández and Sanz 1993; 17 Font Quer 1962; 18 Galán 1993; 19 Gil Pinilla 1995; 20 González Tejero 1990; 21 Granzow de la Cerda 1993; 22 Guzmán Tirado 1997; 23 Lastra 2003; 24 Lastra et al. 2000; 25 Lastra and Bachiller 1997; 26 López Sáez 2002; 27 Losada, Castro and Niño 1992; 28 Martínez Lirola, González Tejero and Molero 1997; 29 Masclans; 30 Mesa 1996; 31 Molina Mahedero 2001; 32 Mulet 1991; 33 Muntané 1994; 34 Obón and Rivera 1991; 35 Oria de Rueda, Diez and Rodríguez 1996; 36 Panero and Sánchez 2000; 37 Parada et al. 2002; 38 Pardo-de-Santayana 2003; 39 Rabal 2000; 40 Rigat, Garnatje and Vallès 2006; 41 Rivera et al. 1994; 42 San Miguel 2004; 43 Tardío, Pascual and Morales 2002; 44 Triano 1998; 45 Verde, Rivera and Obón 1998; 46 Verde et al. 2000; 47 Villar et al. 1987; 48 Villar, Sessé and Ferrández 2001

he called *Chrysocome altera* (L'Écluse 1576). According to Colmeiro (1885–1895), *manzanilla* also referred during the Renaissance to *Gnaphalium luteo-album*, but it is likely that this plant was *Helichrysum stoechas* or another species of the same genus, since Laguna (1499–1559), the Spanish translator of Dioscorides, also mentioned the name *manzanilla bastarda* (false manzanilla) for *Helichrysum stoechas* (Laguna 1555). Laguna also reported the use of *manzanilla loca* ('crazy manzanilla') for *Tanacetum parthenium.*

Up until the twentieth century, all of the plants known by *manzanilla*, *camomila* or some cognate term were members of the Asteraceae (see Colmeiro 1885–1895). Importantly, the Spanish pharmacopoeias from 1739 to 1884 included more than thirty species called *manzanilla*, but the pharmocopoeias of the twentieth century have restricted the category of *manzanilla* to *Chamaemelum nobile*, *Matricaria recutita* and *M. aurea*. This represents a logical and somewhat understandable switch in the criteria used to classify and label plants in pharmacopoeias, from those with similar morphological characteristics, daisy-like species, to those species of the same family with similar medicinal properties, mainly used for digestive disorders (Casermeiro et al. 1995), including even those that did not have ligulated flower heads.

While this contraction of the folk generic is not surprising given the function of pharmacopoeias, in common usage the category has widened its meaning, to cover also other highly valued species with digestive functions from other families, and of course, with very different appearances. Our surveys of the literature showed 215 vernacular names assigned to 62 species, including many synonyms, which yields a total of 369 vernacular denominations, or combinations of vernacular and botanical names.

This richness of names applied to *manzanilla/camomila* provides interesting information about the underlying criteria being used in plant classification. The epithets, secondary lexemes used to label the different species, refer to places of origin or use, habitat, morphology, function and if they are appreciated or not (Table 14.2). Common epithets that appear across the country include terms for 'bitter', 'true', 'sweet' and 'fragrant'. There are also restricted names, found only in certain parts of the country that generally refer to rare or local species, such as *Sierra Nevada*, *Gredos* or *Urbasa.* Other epithets indicate if they are valued (good, genuine, noble) or not (coarse, rude, crazy).

Table 14.2. Epithets that are used to label plants known as *manzanilla/camomila* and derived names in Spanish

Meaning of epithets	Spanish epithets (English translation)
Morphological, organoleptical and phenological characteristics	*Amarillo* (yellow), *blanca* (white), *dorada* (golden); *invierno* (winter), *San Juan* (Saint John); *espatulada* (spatulated), *estrellada* (star), *flor* (flowered), *margarita* (daisy), *rastrera* (creeping); *olorosa* (fragrant), *sin olor* (scentless), *hedionda* (stinky); *amarga* (bitter), *dulce* (sweeet), *fina* (delicate, mild), *fuerte* (strong)
Habitat (cultivated, noncultivated)	*Corral* (courtyard), *huerto* (kitchen garden), *jardín* (flower garden); *silvestre* (wild); *campo* (country), *alpina* (Alpine), *bosque* (forest), *lastra* (rocky), *marina* (sea), *montaña* (mountain), *puerto* (mountain pass), *sierra* (high country)
Region of origin or region of use	*Alemana* (German), *aragonesa* (Aragonese), *americana* (American), *francesa* (French), *gallega* (Gallician), *portuguesa* (Portuguese), *romana* (Roman), *valenciana* (Valencian), and from many other regions and localities (Aralar, Granada, Gredos, Mágina, Maó, Moncayo, Navarra, Nuri, Pirineo, Sierra Nevada, Soria, Urbasa , Urgel)
Uses	*Purgante* (purgant), *tinte* (dyeing), *yesquera* (kindling)
Pejorative epithets	*Basta* (coarse), *bastarda* (illegitimate), *borde* (rude), *borriquera* (donkey), *falsa* (false), *gorda* (fat), *loca* (crazy), *mala* (bad), *morisca* (moorish), *manzanillón* (big)
Appreciative epithets	*Buena* (good), *común* (common), *legítima* (genuine), *noble* (noble), *real* (true), *vera* (true)

At first glance, the correspondence between vernacular and scientific names seems to be rather chaotic. The same species is called by different and contradictory names: *Anthemis cotula*, for example, is called *sin olor* (scentless), *fina* (delicate, mild) or *hedionda* (stinking). Moreover, the same label can be used for species with different characteristics. *Manzanilla loca* (crazy), for instance, is used for the disgusting species *Anacyclus clavatus*, but also for the pleasant *Matricaria recutita*. On the other hand, epithets that indicate appreciation are used both for the best chamomile substitutes and for other, less valued species; so *vera* (true) refers to the most esteemed *Chamaemelum nobile* and *Matricaria recutita*, as well as their substitutes *Phagnalon saxatile*, *Achillea millefolium*, *Helichrysum stoechas*. However, these examples are not the rule but the exception. Typically, appreciative names refer to delicious species and pejorative names to those species of a worse quality.

In Navarra, for instance, *Santolina chamaecyparissus* is widely called *manzanilla*. There are people who prefer it to *Chamaemelum nobile* and they call *Santolina chamaecyparissus* just *manzanilla*, while those who prefer *Chamaemelum nobile* call *Santolina chamaecyparissus* by pejorative names such as *manzanilla basta* or *manzanilla de burro* (rough or donkey chamomile) (Akerreta et al. 2007).

The process of extending the meaning of the term *manzanilla* from *Matricaria recutita* and *Chamaemelum nobile* to many other plants exemplifies the links between oral and written traditions in so-called 'popular knowledge'. Names used by botanists and herbalists and 'popular names' have been interchanged, producing a rich and varied, but confusing lexicon.

The compilation of Colmeiro (1885–1889) is particularly useful, since it includes 'popular' and 'botanical' names in use at the end of the nineteenth century, which can be compared with those used in the twentieth and twenty-first centuries. According to Colmeiro, 32 species, 81 names and 110 vernacular denominations were known as *manzanilla*, *camomila* or some derived names. It is difficult to know which of these names were in fact known only to botanists and people familiar with botanical and herbal books, and which of them were 'popular names' used by common people. In fact, less than 25 per cent of these denominations have been discovered in use in modern ethnobotanical surveys (Álvarez 2006), likely evidence that most of them were names that never became widespread.

The binomial *manzanilla romana* is a good example of the influence of written botanical knowledge and popular knowledge. This name appears in the botanical texts compiled by Colmeiro, only for referring to *Chamaemelum nobile*, but it was later borrowed for many other species, such as the chamomile substitutes *Achillea millefolium* and *Anthemis arvensis*. It is not possible to reconstruct how this process of transferring names actually happened, but, to speculate for a moment, one possibility is that herbal sellers could have begun to use and sell these species as

Chamaemelum nobile substitutes, at first telling people that they have similar properties to *manzanilla romana*, and then eventually just calling them by that name. Associating new products with older and successful ones seems a logical, if deceptive, marketing strategy, and if there were no noticeable differences in the functions of these new plants, then perhaps consumers would have been willing to go along with the new names. The lack of availability of the original species, for whatever reason, would also allow for its name to be transferred to other species.

From the consumer's point of view, there may have been good social reasons to adopt the names of what are considered 'exotic' or high status kinds of chamomile. As with other luxury goods such as wine, coffee and even chocolate, chamomile types would have been ranked on both an economic and a prestige scale. Serving an expensive or high status tea would have indicated a higher social standing. Similarly, local or familiar types of chamomile might be renamed with more exotic names in order to associate oneself with a wider, more 'developed' and therefore prestigious social context.

Recent survey work shows that rural people in many parts of Europe often lack confidence in their own culture and language, and think that their local name is not the 'correct' or 'proper' name. This devaluation is said to arise from the adoption by recent rural migrants to the cities of the prevailing urban stereotype of rural life as simple and backward (Gómez Pellón 2004; A. Pieroni personal communication).

On the other hand, it is possible that some of the names used by botanists have been taken from the pool of popular epithets and used to label species that did not have any Spanish, Catalan or Galician names. This seems a likely explanation for the names *manzanilla bastarda* for *Anthemis tuberculata* (Blanca and Morales 1991) and *camamilla borda* for *Chrysanthemum coronarium* (Masclans 1981), which have never been recorded in ethnobotanical studies.

Other tendencies can be outlined if the popular names compiled in modern ethnobotanical surveys are compared with those that appear in botanical books. Pejorative names and those inspired by morphology, uses or habitat are more frequently found in popular nomenclature, while names that indicate a region of use or origin are less common (see Table 14.1). The use of geographical epithets in scientific nomenclature is very frequent, since it is easier for a botanist to have access to knowledge about the global distribution of the species and of their uses. Therefore, it is possible that some of the popular names that include a geographical epithet derive from botanists' names.

Unfortunately, there is just not enough information to come to any firm conclusions about whether such shifts between vernacular and scientific plant nomenclature have occurred, but the subject is both fascinating and necessary and deserves more attention in future research.

Highly Valued, Widely Used Chamomiles

In Spain, as in many other European countries, the two chamomiles that have been most widely and regularly used are *Chamaemelum nobile* and *Matricaria recutita* (San Miguel 2004; Pardo-de-Santayana 2005). Both herbs are used for the same purposes: they are prepared as a tea and drunk mainly for aiding the digestive process, after the main meals, or as a relaxant before going to bed. However, they serve social functions as well, being an important component of the socializing and conversation that occurs after meals (Pardo-de-Santayana, San Miguel and Morales 2006). Another highly valued species but less commonly used nowadays is *Matricaria aurea*. All three species were included in previous editions of the Spanish Pharmacopoeia (Farmacopea Oficial Española IX 1954) and have very similar pharmacological actions, including tonic, carminative, antispasmodic, emmenagogue, choleretic and cholagogic, anti-inflammatory, analgesic, antiseptic, antifungic and antiparasitic properties. Used internally, they fight colic and improve the digestion, stimulate the secretion and production of bile, and act as a sedative. Applied externally, they treat eye infections and dye hair blond. They are also used to aromatize many traditional liqueurs (Tardío, Pardo-de-Santayana and Morales 2006).

As might be expected of such a valued and widespread species, there is less variation in the local vernacular, so *Matricaria recutita* (Figure 14.1A) is usually known as *manzanilla*, without epithets, but it can also be labelled by such binomials as *manzanilla dulce* (sweet). This annual blossoms in spring,

Figure 14.1. Highly valued, widely used chamomiles in Spain. A. *Matricaria recutita* B. *Matricaria aurea* C. *Chamaemelum nobile*

grows wild around cultivated fields and on fallow land, and is cultivated in homegardens or fields in the south and east of Spain. The most common of chamomiles in Spain, *M. recutita* is marketed and sold in tea bags in supermarkets or served in bars or restaurants and its use is not restricted to rural areas. Besides chamomile being a lucrative crop domestically, Spain produces approximately fifty tonnes of chamomile's flowering tops for export to the U.S.A., Germany and other countries. However, this is just half of the production of ten years ago, as countries from the former Eastern Bloc are now the most important exporters of medicinal plants (J.L. López Larramendi, personal communication; Lange 1998).

Chamaemelum nobile (Figure 14.1C) is also known as *manzanilla*, but is usually distinguished from *M. recutita* with secondary lexemes such as *manzanilla amarga* (bitter) or *manzanilla romana* (Roman). This perennial herb blossoms in summer and grows in grazed grasslands, though many report its decline there due to changes in agropastoral systems that have led to less intensive grazing (Barandiarán and Manterola 1990). Although it is more common in the northern half of Spain, *C. nobile* can be found in the cold and humid mountainous regions of the south. It is considered a pleasant and aromatic herb with a characteristic bitter flavour, which many people claim to prefer over the sweet varieties 'served in bars'. Although it is possible to purchase it in herbal shops, wild gathering is preferred and considered one of the central activities of the summer (San Miguel 2004); not to collect is considered by some to be a sign of slovenliness and lack of foresight! Many people collect *C. nobile* to send to their relatives who have moved to the cities (Pardo-de-Santayana 2003).

The third widespread species is *Matricaria aurea* (Figure 14.1B), known as *manzanilla fina* (delicate), a name that derives from its smooth, mild and delicate flavour. This annual blossoms at the end of the winter or at the beginning of spring, and grows in trampled sites such as paths, roads or streets that have not been surfaced, though it is less common these days because many of these locations have now been paved. So people who like this chamomile now have to protect it (Tardío, Pascual and Morales 2002). It is highly esteemed in many rural areas, and some people prefer it to the more well known *Matricaria recutita* and *Chamaemelum nobile* because its scent is so aromatic and delicate (Laguna 2006). Once listed in the Spanish pharmacopoeia (Farmacopea Oficial Española IX 1954), it has been left out of a recent edition because of the decline in its use (Real Farmacopea Española 2005).

Highly Appreciated, but Locally Used Chamomiles

Artemisia granatensis, known as *manzanilla de Sierra Nevada* or *manzanilla de la sierra*, grows only in rocky places above 2,000 m in the Sierra Nevada (south of Spain). Boissier, the botanist who described the species in the

nineteenth century, commented that shepherds gathered it in great amounts and sold it in the city of Granada. These shepherd-gatherers were called *manzanilleros* ('chamomile gatherers'), and they went to great efforts to collect the herb because it was considered a panacea or a miracle cure-all, though only its digestive properties have been validated (Calle and Gómez 2009). The high demand eventually led to increased scarcity, higher prices and the threat of local extinction, so the species was officially protected in 1982 (Blanca 2003). The plant achieved national notoriety when a local shepherd was charged with illegal gathering, and threatened with a two-year prison sentence and a €1,500 fine. Most people thought the punishment far outweighed the crime and were happy when he was finally acquitted. The case brought attention to the sustainability of wild-harvested plants in Spain, and the need for environmental education and alternatives so that shepherds and other gatherers and consumers could still enjoy chamomiles and other herbs without endangering their existence. The fact that this species has already been cultivated in the Andalusian Botanical Gardens (Clemente et al. 1991) suggests that it might be possible to substitute cultivated for wild varieties.

The Sierra de Gredos, in the Centre-west of Spain, also has its own *manzanilla*, *manzanilla de Gredos (Santolina oblongifolia).* It grows at 1,000 m elevation in the rocky mountains of Ávila, Salamanca and Cáceres provinces, and is considered sensitive to habitat alterations and thus is also listed as endangered (Regional Catalogue of Threatened Species of Extremadura 2001 DOE – decree 37/2001, 6 March). Highly valued for its sweet, mild flavour, it is used as a digestive tonic, as a sedative, and for treating menstrual disorders and rheumatism (Silván et al. 1996; López Sáez 2002).

Chamomile Substitutes

It is common that medicinal plants are substituted or replaced by others with similar morphology or properties. This can be due to the scarcity or high price of the former and the easier accessibility of the replacement species. Vernacular plant names also reflect their function as substitutes. All of the substitutes described here are morphologically quite different from *Matricaria recutita* or *Chamaemelum nobile* and thus people do not confuse them.

The most popular chamomile substitute is *Helichrysum stoechas* (Figure 14.2B), known as *manzanilla* at least since the sixteenth century (Laguna 1555). It grows throughout the country, typically in rocky, stony and other poorly developed soils. *Helichrysum stoechas* has a distinct aroma, similar to cognac or curry, but is usually considered too strong for use by humans. Most people use it only for healing animals or when better chamomiles are not available. However, in some regions it is called *manzanilla real* (royal),

fina (delicate) or *vera* (true) and some people even prefer it to *Matricaria recutita* or *Chamaemelum nobile* (Mulet 1991; Pardo-de-Santayana 2003). It has been reported as being sold in the local markets of Cantabria and Palencia (J. Tardío personal communication), and is typically used against toothache, respiratory disorders and intestinal parasites. It is also known as *siempreviva* (everlasting) because its flowers will last indefinitely when dried and therefore are used to adorn the house (e.g., Verde, Rivera and Obón 1998). A closely related species, *Helichrysum italicum*, is similarly used.

Achillea millefolium is also often known as *manzanilla/camomila.* It grows in grassy areas, in old fields, along roadsides and other edges, and in forest clearings throughout Spain. It is called *manzanilla* in the northern half of Spain (Esgueva 1999; San Miguel 2004), where it is valued as an herbal digestive tea. Interestingly, it is beginning to be called *manzanilla* in Segovia, a province in the centre of Spain, due to the influence of outsiders (Blanco 1998). People now use it as a *digestif* and for other complaints, and not only for treating wounds as it was traditionally used there. *Achillea millefolium* has been also employed to treat rheumatic and menstrual pain, diarrhoea, intestinal parasites, haemorrhoids, headache, fever and hypertension, and to enhance diuresis (Villar et al. 1987; Blanco 1998; Pardo-de-Santayana 2003). Other species of the genus *Achillea* such as *A. ageratum*, *A. odorata*, *A. ptarmica* and *A. pyrenaica* are also known as *manzanilla* or *camomila* (Font Quer 1962; Masclans 1981; Villar et al. 1987; Mesa 1996).

Figure 14.2. Chamomile substitutes in Spain. A. *Santolina chamaecyparissus* B. *Helichrysum stoechas*

Another common chamomile substitute is *Santolina chamaecyparissus* (Figure 14.2A), which grows in open scrubland on calcareous soils mainly in the east of the Iberian Peninsula. Known commonly as *manzanilla amarga* because of its strong bitter flavour, it is typically used where *Matricaria recutita* or *Chamaemelum nobile* are not easily found (Ferrández and Sanz 1993; Gil Pinilla 1995). However, it is highly esteemed in some regions of Catalonia (Bonet et al. 1999), Navarra (Akerreta et al. 2007) and Menorca (Font Quer 1962), and in Sierra Nevada it is consumed as a substitute for *Artemisia granatensis* (Barrero et al. 1998). Among other uses, it is appreciated as a vulnerary, emmenagogue or vermifuge (Font Quer 1962). Another species in this genus, *Santolina rosmarinifolia*, is also known as a *manzanilla* and is reportedly used in Jaén to improve the digestion (Guzmán Tirado 1997).

Many of these herbs are known to have active ingredients that influence the efficiency of the digestive process. They are rich in:

1. Anti-inflammatory agents such as chamazulenes (*Matricaria recutita, Santolina chamaecyparissus*), coumarins (*Matricaria recutita, Santolina oblongifolia*) and flavonoids (*Helichrysum stoechas*).
2. Antispasmodics such as apigenol and bisabolenes (*Matricaria recutita, Santolina chamaecyparissus*), and caffeic acid (*Helichrysum italicum*).
3. Antiseptics such as α-pinene, (*Santolina chamaecyparissus, Chamaemelum nobile*).
4. Eupeptics such as achillicin (*Achillea millefolium*).

Other species, such as *Artemisia granatensis*, also have anti-inflammatory and eupeptic properties but their phytochemistry has been little studied.

Other species that have been used as chamomile substitutes or adulterants are *Anthemis arvensis*, *Matricaria dioscoidea*, *Tanacetum parthenium* (see Table 14.1), *Herniaria glabra* (Guzmán Tirado 1997; Fajardo et al. 2000; Fernández Ocaña 2000), *Leucanthemum vulgare*, *Phagnalon saxatile* (Mulet 1991), *Convolvulus boissieri*, *Erodium foetidum* (Mesa 1996), *Anthemis cotula*, *Bellis perennis* (Colmeiro 1885–1895), *Artemisia barrelieri* (Obón and Rivera 1991), *Artemisia herba-alba*, *Bupleurum falcatum* (Villar et al. 1987), *Staehelina dubia* (Molina Mahedero 2001), *Pterocephalus spathulatus* (González Tejero 1990), *Paronychia argentea* (Guzmán Tirado 1997), *Anacyclus clavatus* (Fernández Ocaña 2000) and *Chamaemelum fuscatum* (Triano 1998).

Conclusion

In this chapter, we have reviewed historical accounts and recent ethnobotanical surveys of Spain to understand which botanical species are referred to by locals as *camomila* or *manzanilla*, and why they are grouped

in this large folk-generic category. We found a total of 215 different names assigned to 62 species, including many synonyms, which yield a total of 369 vernacular denominations; that is, the combination of vernacular and botanical names. Thus, *manzanilla/camomila* is a complex folk-generic composed of:

1. A small number of highly valued and wide spread prototypical species that have little variation in vernacular names.
2. A few highly valued, but ecologically restricted species that tend to have local vernacular names.
3. A large number of chamomile substitutes with a great variety of local names.

There is evidence from old botanical texts, herbals and other literature from across Europe that this folk generic has always been variable and expanding. In Spain, *manzanilla/camomila* was first a category of plants with similar flowers, then one with similar medicinal properties, and now a broad category with a great number of species, most belonging to the Asteraceae family, all of them used as herbal teas with similar properties and uses. Thus morphological, phytotherapeutic and phytochemical characteristics, and even economic and social features, now bind this great variety of species together in peoples' minds.

The old fraud of adulterating medicinal plants and the confusions between similar species explain why some of them were included. For example, the genera *Matricaria*, *Chamaemelum* and *Anthemis* are very similar and can be easily confused and thus have been historically used as chamomile adulterants. Substitutions for unavailable or rare medicinal botanicals have also resulted in a transfer of plant names from the replaced to the substitute species (Akerreta et al. 2007). This appears to be the case for highly valuable species such as *Santolina chamaecyparissus* or the endemic *Santolina oblongifolia*, restricted to the Sierra de Gredos. It seems that once people had a concept *manzanilla/camomila*, then other valuable species with similar properties were labelled with the same name, giving them a higher market value and an overall higher cultural salience.

In general, our survey suggests that the most prototypical species of this broad and inclusive folk category are the most commonly used in Spain, and also across Europe, *Matricaria recutita* and *Chamaemelum nobile.* Both also have a long history of use in the Mediterranean region. At least one of these two species can be found in most Spanish households since chamomile belongs to the basic first-aid kit. They are either drunk daily, for their general positive impact on health and well-being, as a preventive beverage, or when needed as a digestive and sedative infusion (Raja, Blanché and Vallès 1997; Pardo-de-Santayana 2005). Both species are used in a great number of areas having the highest frequency of citation;

that is, the highest number of people who used them in each area (e.g., Raja, Blanché and Vallès 1997; Pardo-de-Santayana 2005). This strong agreement can be regarded as indicative of the efficacy of their medicinal properties and efficacy (Heinrich 2000).

While *Matricaria recutita* is the only species widely marketed and served in bars or restaurants, many people in rural areas prefer to collect their local type of chamomile since they consider it more healthy and tasty. Some chamomiles are highly valued, while others are only used when a better species is not available. However, most species have not been as widely consumed as they are now, and there is no evidence of their widespread use in the historical record (Font Quer 1962).

Herbal infusions are drunk as herbal remedies, as preventive beverages, but also for pleasure. They often originate as medicines, but after people get used to them they acquire additional uses in food contexts. Infusions begin to be consumed at breakfast, while enjoying conversation in a bar or café, or following a family meal or social occasion, and therefore come to be known as 'food medicines'. This is especially common for those herbal teas that improve digestion (Pardo-de-Santayana, Blanco and Morales 2005).

There is no evidence that the current consumption of herbal teas in food contexts, such as mint tea, have a long history of use in Europe. Before tea was introduced in Europe in the sixteenth century, mint tea was only widely used in Muslim countries, where alcohol was not permissible, or by Portuguese people who had acquired the habit from Arabs (Hobhouse 1986). Water was not really fit to drink in most European towns and villages and to avoid the risk of waterborne disease, people had to drink boiled water or alcohol strong enough to kill germs. However, other infusions such as coffee or tea contain socially tolerated stimulating drugs, and were therefore soon accepted. Chamomiles and other infusions are not stimulant beverages, but have other desirable medicinal properties, many being *digestifs.* It seems that after tea was introduced into Europe, many other hot beverages became popular as well.

Across Europe, then, wild herbs are under severe threat from expanding markets driven in part by changing perceptions of health and wellbeing and in part by an increasing association of the wild with higher social status. The rising demand for chamomile led to its cultivation many centuries ago. Today's wild populations cannot meet its huge and ever increasing demand, although it is still commonly gathered in rural areas, albeit for local use. The richness of morphological varieties of *Matricaria recutita* and *Chamaemelum nobile* in Spain offers many possibilities for developing new cultivars, but study of their agronomical and chemical characters is needed. Other species that should be moved into cultivation include those narrow endemic species such as *Artemisia granatensis* that have suffered from overexploitation.

Thus, it's likely that the dynamic category of *manzanilla / camomila* will continue to expand to include these new cultivated varieties and species. On the other hand, with growing competition, regional varieties may come to be specially demarcated, and as we have seen with wines, liquors and other botanical products, a great proliferation of names may appear to distinguish and identify them.

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Appendix 14.1. List of species known as *manzanilla/camomila* and derived names mentioned in the text

Achillea ageratum L.
Achillea millefolium L.
Achillea odorata L.
Achillea ptarmica L.
Achillea pyrenaica L.
Anacyclus clavatus (Desf.) Pers.
Anthemis arvensis L.
Anthemis cotula L.
Anthemis tinctoria L.
Anthemis tuberculata Boiss.
Artemisia barrelieri Besser
Artemisia granatensis Boiss.
Artemisia herba-alba Asso
Bellis perennis L.
Bupleurum falcatum L.
Chamaemelum fuscatum (Brot.) Vasc.
Chamaemelum mixtum (L.) All.
Chamaemelum nobile (L.) All. (= *Anthemis nobilis* L.)
Chrysanthemum coronarium L.
Convolvulus boissieri Steud.
Erodium foetidum (L.) L´Hér.
Gnaphalium luteo-album L.
Helichrysum italicum (Roth) G. Don
Helichrysum stoechas (L.) Moench
Herniaria glabra L.
Leucanthemum vulgare Lam.
Matricaria aurea (Loefl.) Sch.Bip.
Matricaria dioscoidea DC.
Matricaria recutita L. [=*Matricaria chamomilla* L., *Chamomilla recutita* (L). Rauschert]
Paronychia argentea Lam.
Phagnalon saxatile (L.) Cass.
Pterocephalus spathulatus (Lag.) Cout.
Santolina chamaecyparissus L.
Santolina oblongifolia Boiss.
Santolina rosmarinifolia L.
Staehelina dubia L.
Tanacetum parthenium (L.) Sch.Bip.
Tripleurospermum inodorum (L.) Sch.Bip. (= *Matricaria inodora* L., *Matricaria maritima* L.).