



## Global Ingredients: The Diverse Origins of Natural Materials in Ms. Fr. 640

Omeka exhibit with gallery and map by Elia Zhang and Helena Seo, Fall 2021

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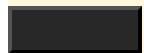
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# Global Ingredients: The Diverse Origins of Natural Materials in Ms. Fr. 640

*Global Ingredients: The Diverse Origins of Natural Materials in BnF Ms. Fr. 640* is a project that developed out of a seminar, “Making and Knowing in Early Modern Europe: Hands-On History” (Fall 2021) at Columbia University. At the center of the seminar was the anonymous sixteenth-century French artisanal and technical manuscript, BnF Ms. Fr. 640.

The *Global Ingredients* project intends to serve as a complementary resource to [\*Secrets of Craft and Nature in Renaissance France. A Digital Critical Edition and English Translation of BnF Ms. Fr. 640\*](#). The aim of our project is to show the geographic diversity of ingredients used in Ms. Fr. 640 by visualizing their locations of origins through an interactive map, accompanied by texts that describe and further contextualize the ingredients.

Our research traces the history and evolution of ingredients – ranging from natural materials for pigments and animal byproducts for perfumes to substances with medicinal properties – that moved across the Old World (Afro-Eurasia) and the New World (North and South America).

Reflecting the fluidity of the cross-cultural exchanges across geographical boundaries during the early modern period, our selection of ingredients includes long-distance and newly traded materials around the author-practitioner’s time as well as materials brought from shorter distances (i.e., locations outside of Toulouse, France that fall within the borders of modern-day Europe). Some ingredients have complex (and sometimes unclear) origins that involve multiple locations while others have more straightforward provenances. Our curated collection of ingredients is only a start to show the extent of an increasingly globalized world manifested in Ms. Fr. 640.

To accommodate our present-day audience while also working within the available options in our chosen digital mapping tool, we are using the global map with modern national boundaries (National Geographic). Based on this map, we provide an approximation of the geographical origins of the ingredients. For historical reference, we offer a world map nearly contemporaneous to Ms. Fr. 640 (dated to ca. 1580) and produced by the cartographer Rumold Mercator (1545-1599) on the next page.

## Credits

Elia Zhang and Helena Seo

- [World Map, 1587](#)
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  - [Plant Products](#)
  - [Animal Products](#)
  - [Gums and Resins](#)
  - [Dyes and colorants](#)
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## Map



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Galleries on the following pages offer thumbnail images of ingredients organized into different categories. However, these categorizations are not strict. Many of the ingredients, both plant- and animal-based, have multiple and often overlapping uses, including those pertaining to medicinal and aromatic.

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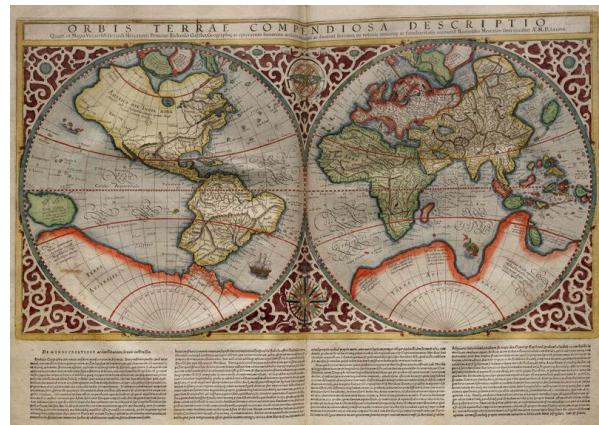
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## World Map, 1587



Rumold Mercator, *World Map (Orbis terrae compendiosa descriptio)*, engraved and hand-colored in 1587 after the 1569 map of his father, Gerardus.

World Map, 1587

[Map →](#)

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## Gallery



Ambergris



Armenian bole



Brazilwood



Candy Sugar



Cinnamon



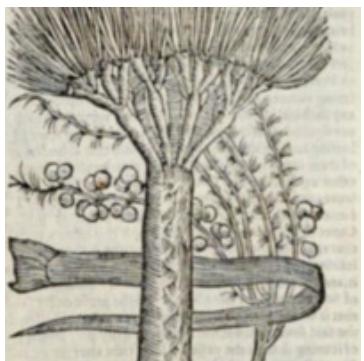
Civet



Clove



Cochineal



Dragon's blood



Fenugreek



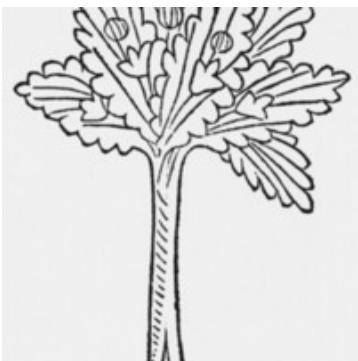
Gum ammoniacum



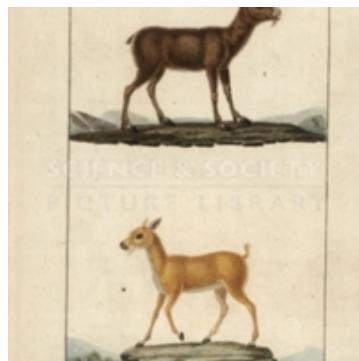
Gum arabic



Lac



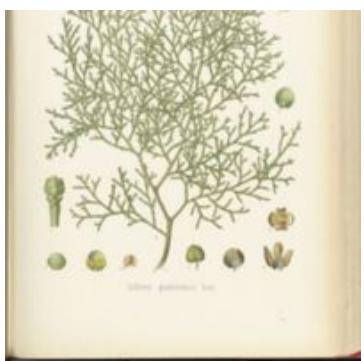
Mastic



Musk



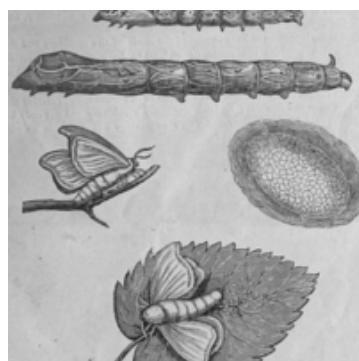
Sandalwood



Sandarac gum



Semperviva



Silkworm



Storax/styrax



Tragacanth gum



Turmeric

← Map

Gallery

Plant Products →

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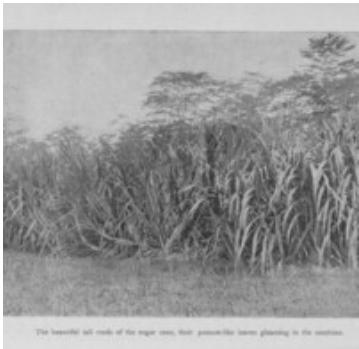
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## Plant Products



Brazilwood



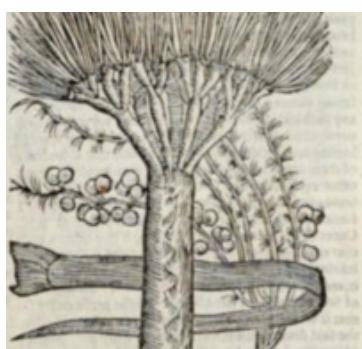
Candy Sugar



Cinnamon



Clove



Dragon's blood



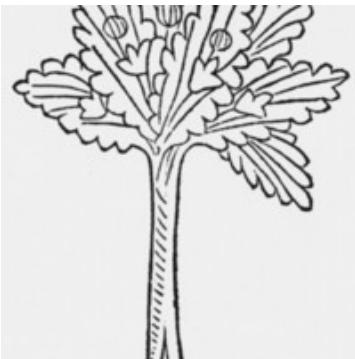
Fenugreek



Gum ammoniacum



Gum arabic



Mastic



Sandalwood



Sandarac gum



Semperviva



Storax



Tragacanth gum



Turmeric

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[Gallery](#)  
Plant Products

[Animal Products →](#)

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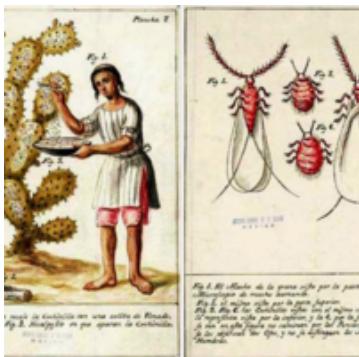
## Animal Products



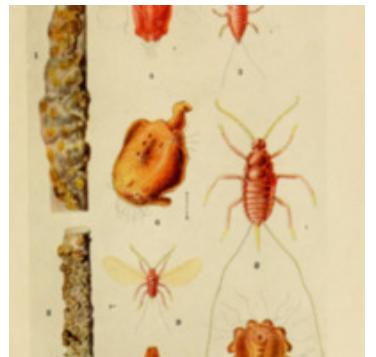
Ambergris



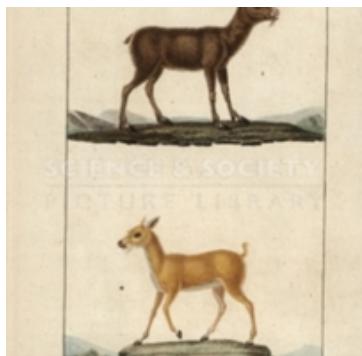
Civet (Civette)



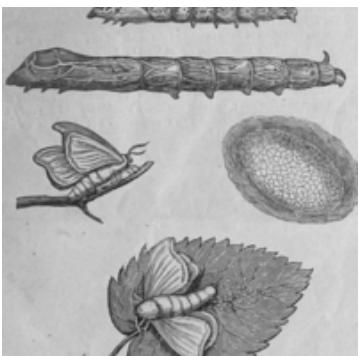
Cochineal



Lac



Musk



Silkworm

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Animal Products

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## Gums and Resins



Gum ammoniacum



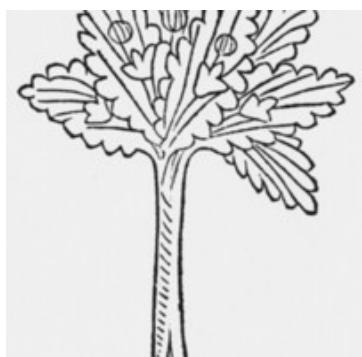
Gum arabic (or acacia gum)



Sandarac gum



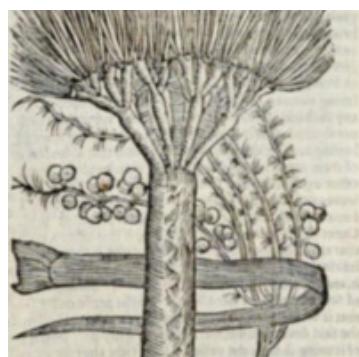
Tragacanth gum



Mastic



Storax



Dragon's blood



Lac

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## Dyes and colorants



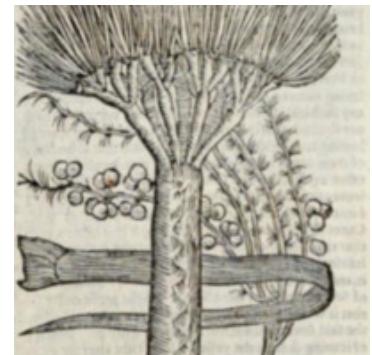
Armenian Bole



Brazilwood



Cochineal



Dragon's blood



Lac



Turmeric root (*terra merita*)

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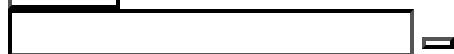
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# Cinnamon

## Dublin Core

### Title

Cinnamon

### Subject

Cinnamon is a commonly known light brown spice made from the inner bark of a number of species of cinnamon trees, of the genus *Cinnamomum*. It has a delicate aroma and a sweet flavor.

Cinnamon oil comes in two forms: bark oil and leaf oil. Bark oil is often used for culinary purposes, whereas leaf oil is used as an essential oil because it has a high eugenol content with a clove-like aroma.

### Description

Cinnamon is believed to have originated from the region of Arabia, more specifically Ceylon, present day Sri Lanka. In 1460, it was recorded by John Russell in his *Book of Nurture* after the British brought it from the Middle East. In 1505, it was found by the Portuguese in Ceylon who proceeded to occupy the island for this plant. Because it was comparatively inexpensive, it was widely used in dishes during the early modern period. In 1636, the Dutch took over the island and seized the monopoly on cinnamon and continued its cultivation. Later in the nineteenth century, Ceylon was occupied by the British. Another source of cinnamon comes from the Seychelles Islands in the Indian Ocean, where the French introduced it in the eighteenth century. It is also native to present day India and Burma.

### Source

In Ms. Fr. 640

Fol. 1v - "For loosening the belly"

Prunes of Saint Antonin, & if you like you want put among them leaves of mallow & gilliflower, adding in sugar &, if one wants, a little cinnamon for the stomach.

Or else marshmallow root in a chicken broth. The fresh kind is more mollifying.

Beating syrup of sweet jujubes with water & taking it in the morning loosens the belly.

Fol. 47r - "For teeth"

Sal ammoniac i ȝ, rock salt 1 ȝ, alum half an ȝ. Make water with the retort, and as soon as

you touch the tooth, the tartar & blackness will go away. It is true that it has a bad odor, but you can mix it with rose honey & a little cinnamon or clove oil.

Fol. 48r - "Excellent mustard"

Dry bread in an oven, then lard it with cloves & cinnamon & thus put it to soak in good wine. Then, pass everything through a tammy cloth, being well pestled, & incorporate it with your mustard seed.

## Contributor

"Cinnamon." *World Encyclopedia*. Philips, 2014.

<https://www.oxfordreference.com/view/10.1093/acref/9780199546091.001.0001/acref-9780199546091-e-2461?rskey=LJSd9D&result=2>.

Alan Davidson. "Cinnamon." In *The Oxford Companion to Food* (2 ed.), edited by Jaine, Tom. Oxford University Press, 2013.

<https://www.oxfordreference.com/view/10.1093/acref/9780199546091.001.0001/acref-9780199546091-e-2461?rskey=LJSd9D&result=2>.

Image: "Cinnamomum verum J.Presl." fo32xiv-033r, *Plantarum Malabaricarum icones* BPL 126 D - part 1, Leiden University Libraries, <http://hdl.handle.net/1887.1/item:937812>.

*Elia Zhang, Columbia University*

## Files



## Citation

"Cinnamon," *om+ka*, accessed July 16, 2025, <https://catapanoth.com/omandka/items/show/1>.

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# Brazilwood (*bresil*)

## Dublin Core

### Title

Brazilwood (*bresil*)

### Subject

Brazilwood is any of a number of tropical trees of the *Senna* genus *Caesalpinia*, such as *C. brasiliensis* (from Brazil), *C. crista* (from Pernambuco), *C. echinata* (peachwood from Nicaragua), or *C. sappan* (sappanwood native to Southeast Asia, including India, Indonesia, Thailand, Sri Lanka, and the Philippines.) The colorant *Brasilin* in the wood yields a deep red to brownish color. Brazilwood dye has been used for inks, varnish tints, paints, textile and leather dyes, and wood stains.

### Description

In medieval Europe, sappanwood from Sumbawa in the Indonesian archipelago, was widely used for dyeing textiles. In the sixteenth century, the introduction of other redwoods, including Brazilwood, from the New World that were found to be more powerful coloring agents eventually led to the replacement of woods from Asia.

### Source

In Ms. Fr. 640:

Fol. 6r – “For laying down and seating burnished gold and giving red or green or blue”  
... And if you want to lay in rouge clair & glaze with it, grind Venice laque platte on marble with walnut or linseed oil. Once ground, mix turpentine or spike lavender varnish & apply on the gold with the paintbrush. Brazilwood & laque ronde die...

Fol. 33v recommends using Brazilwood to imitate blood

Fol. 33v – "For making blood or wine issue from someone's forehead or from a wall"

Take a funnel or funnel of fer blanc which is double-walled in the body but not in the spout. Make a small hole at the top edge & another, slightly bigger, on the inner wall that will be a little above the spout, just as you can see in the adjacent example. Then when you want to use it,

put in wine or liquid rosette of Brazilwood or black cherry juice, and blocking the hole of the spout with your little finger, make sure that the funnel is well filled in order that the wine can enter there between the double walls through the hole at the side, & if it does not enter well, making it seem as if you are tasting the wine, suck & draw in a little air, drinking where the little hole is...

This recipe on fol. 43v contains no wine, but transmutes red “wine” into white

Fol. 43v – “Varied and transmuted wine”

Grate brazilwood very finely, put it to soak one or two hours in clear water, then take this tinted water & add to it some clear water & you will make wine as claret colored as you like. If you please, put a drop of lemon or orange juice in it & it will immediately turn white. It can be drunk without danger.

## Contributor

<p>“Brazilwood,” The Conservation and Art Materials Encyclopedia (CAMEO), ed. Michele Derrick. <a href="http://cameo.mfa.org/wiki/Brazilwood">http://cameo.mfa.org/wiki/Brazilwood</a>. </p>

<p>George Bryan Souza, “The VOC’s price current records in the long eighteenth century: Commodities and prices in global, intra-Asian, and regional Asian maritime economic history,” in <i>Intra-Asian Trade and Industrialization: Essays in Memory of Yasukichi Yasuba</i>, ed. A.J.H. Latham and Heita Kawakatsu (London; New York: Routledge, 2009), 37-51.</p>

<p>Jo Kirby, “Lake,” Grove Art Online. 2003; Accessed 17 Dec. 2021. <a href="https://www.oxfordartonline.com/groveart/view/10.1093/gao/9781884446054.001.0001/oao-9781884446054-e-7000048810">https://www.oxfordartonline.com/groveart/view/10.1093/gao/9781884446054.001.0001/oao-9781884446054-e-7000048810</a>. </p>

<p>Rw Dapson and CI Bain, “Brazilwood, sappanwood, brazilin and the red dye brazilein: from textile dyeing and folk medicine to biological staining and musical instruments,” <i>Biotechnic & Histochemistry</i> 90, no. 6 (2015): 401-423.</p>

<p>Image: “How the People Cut and Bring the Bresil to the Ships,” from <i>La Cosmographic universelle d’André Thevet cosmographe du roy</i> by André Thevet (Paris: Chez Pierre L’Huillier, 1575). Woodcut. John Carter Brown Library at Brown University.</p>

<p><i>Helena Seo, Columbia University</i></p>

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## Citation

"Brazilwood (bresil)," *om+ka*, accessed July 16, 2025, <https://catapanoth.com/omandka/items/show/4>.

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# Cochineal

## Dublin Core

### Title

Cochineal

### Subject

Cochineal is a natural red dyestuff obtained from the body of the female scale insect, *Dactylopius coccus Costa* (formerly *Coccus cacti*) native to the nopal cactus (*Cactus opuntia* or *C. coccinifera*) in Mexico, the Canary Islands, and in Central and South America. The dye is extracted using water or alcohol from sun- or oven-dried insects that are collected from the cacti.

### Description

While known and cultivated in Mexico and the Peruvian Andes, cochineal first entered Europe when Spain brought it in 1523. It spread quickly, a colorant more potent than any of the other Old World red dyes.

### Source

In Ms. Fr. 640:

Fol. 38v – “Scarlets”

Because one aulne costs seven or eight lb to dye, they use cloths worth seven or eight francs an aulne. But whoever wants something beautiful should buy white cloth worth fifteen francs an aulne & have it dyed with pure scarlet pastel woad & a little cochineal. Black cloth is thin so that the dyeing is inexpensive.

### Contributor

“Cochineal” The Conservation and Art Materials Encyclopedia (CAMEO), ed. Michele Derrick.  
<http://cameo.mfa.org/wiki/Cochineal>.

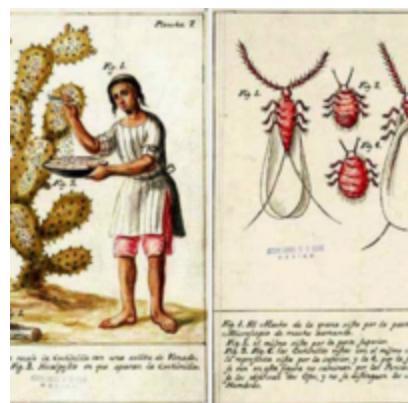
Elena Phipps, *Cochineal Red: The Art History of a Color* (New York: Metropolitan Museum of Art, 2010).

Jo Kirby, "Lake," Grove Art Online. 2003; Accessed 17 Dec. 2021.  
<https://www.oxfordartonline.com/groveart/view/10.1093/gao/9781884446054.001.0001/oao-9781884446054-e-7000048810>.

Image: Illustrations of cochineal collection in José Antonio de Alzate y Ramírez, *Memoria sobre la naturaleza, cultivo, y beneficio de la grana...*, (Essay on the Nature, Cultivation, and Benefits of the Cochineal Insect), 1777. Colored pigment on vellum. Newberry Library, Edward E. Ayer Manuscript Collection, VAULT Ayer MS 1031.

Helena Seo, Columbia University

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## Citation

"Cochineal," *om+ka*, accessed July 16, 2025, <https://catapanoth.com/omandka/items/show/5>.

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# Turmeric root (*terra merita*)

## Dublin Core

### Title

Turmeric root (*terra merita*)

### Subject

Turmeric, or *Curcuma longa*, is part of the Zingiberaceae family and is a rhizomatous plant like ginger. The roots are bright orange and have a thin brown skin. The name turmeric is derived from the Medieval Latin name *terramerita*, which later became *terre merite* in French - meaning “deserved earth” or “meritorious earth.”

### Description

The exact origin of turmeric is uncertain although turmeric has at least 6000 years of recorded history of use as a medicine and within the socio-cultural contexts of the Indian subcontinent. It is likely that turmeric came to India from the ancient regions of Cochin China (present day Vietnam) or China, either through the migration of ancient tribal people to the northeast region of India or through the movement of Buddhist monks. While the Venetian merchant and traveler Marco Polo mentioned turmeric as cultivated in China in 1280 CE, the Portuguese Renaissance physician Garcia de Orta described turmeric under the name *Crocus indicus* (“Indian saffron” but distinct from saffron) in 1563. The means and routes by which turmeric was imported into Europe through the spice trade remain to be further investigated.

### Source

On fol. 148r, the author-practitioner identifies *terra merita* as “turmeric root” (*racine de cucurme*).

Fol. 148r - “Beautiful color for latten”

Having cleaned it well, as is said, & scratch-brushed it well, make it boil in water & turmeric root or terra merita, and it will become very beautiful.

*Terra merita*, which is used as a colorant in making a yellow varnish, appears in two recipes (fols. 29v and 57r) that describe the process of making “color of gold without gold on silver” through the application of a golden colored varnish over silver leaf.

Fol. 29v – “Color of gold without gold on silver”

Color your applied silver leaf with terre emerita, and once dry, give a coat of spike lavender oil varnish and of sandarac. And it will be more beautiful than tinsel.

On fol. 29v, in order to obtain a color more beautiful than fine gold, the author-practitioner instructs us to color silver leaf with some terre emerita and, once it is dry, to apply a coat of varnish of spike lavender oil and sandarac.

#### Fol. 57r – “Painter”

White varnish of turpentine or of spike lavender oil and turpentine is colored with pulverized terra emerita, making it boil together. It gives a gold color on silver and more beautiful if it is burnished. It is dry in a quarter of an hour. Aloe would make brighter color still, but it takes long to dry & the other is dry in a quarter of an hour, in winter as well as summer.

On fol. 57r, in a continuation of an entry entitled “Painter” begun on fol. 56v, the author-practitioner instructs to take terra emerita—this time powdered—and boil it together with varnish, either of spike lavender oil or turpentine.

#### Contributor

Emilie Foyer, “Color of Gold without Gold on Silver,” in *Secrets of Craft and Nature in Renaissance France. A Digital Critical Edition and English Translation of BnF Ms. Fr. 640*, ed. Making and Knowing Project, Pamela H. Smith, Naomi Rosenkranz, Tianna Helena Uchacz, Tillmann Taape, Clément Godbarge, Sophie Pitman, Jenny Boulbouillé, Joel Klein, Donna Bilak, Marc Smith, and Terry Catapano (New York: Making and Knowing Project, 2020),  
[https://edition640.makingandknowing.org/#/essays/ann\\_032\\_fa\\_15](https://edition640.makingandknowing.org/#/essays/ann_032_fa_15). DOI:  
<https://www.doi.org/10.7916/jz70-zv73>.

Maguelonne Toussaint-Samat, “Turmeric and Cardamom,” in *A History of Food*. Translated by Anthea Bell (Chichester, U.K.; Malden, MA: Wiley-Blackwell, 2009), 450.

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P.N. Ravindran, “Turmeric – The Golden Spice of Life,” in *Turmeric: The Genus Curcuma*, ed. P. N. Ravindran, K. Nirmal Babu, and Kandaswamy Sivaraman (Boca Raton (FL): CRC Press/Taylor & Francis, 2007), 1-14.

Sahdeo Prasad and Bharat B Aggarwal, “Turmeric, the Golden Spice: From Traditional Medicine to Modern Medicine,” in *Herbal Medicine: Biomolecular and Clinical Aspects*. 2nd edition, ed. Iris F. F. Benzie, Sissi Wachtel-Galor (Boca Raton (FL): CRC Press/Taylor & Francis, 2011), 263-288.

Image: Curcuma; Turmeric. Plate 396 from the German edition of Elizabeth Blackwell’s “A Curious Herbal” (“Herbarium Blackwellianum...”, 1737-39) published by Christoph Jacob Trew (Nuremberg, 1773). Copper engraving with hand coloring. Missouri Botanical Garden, Peter H. Raven Library.

*Helena Seo, Columbia University*

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## Citation

"Turmeric root (terra merita)," *om+ka*, accessed July 16, 2025,  
<https://catapanoth.com/omandka/items/show/6>.

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Menu



# Sandarac gum

## Dublin Core

### Title

Sandarac gum

### Subject

Sandarac is a hard resin excreted in small transparent drops from the tree *Tetraclinis articulata*.

### Description

The exact botanical origin of sandarac still remains unclear. However, it is most likely that sandarac was obtained from *Tetraclinis articulata*, small conifers of the family *Cupressaceae* that grow in northwestern Africa. In the early modern period, the English, Swedish, and Hambourgeois mainly traded sandarac from Morocco, particularly the Mogador (Essaouira) port.

Until the nineteenth century, sandarac has also been described as "juniper resin" in science publications and dictionaries. Although sandarac has played an important role in medicine since the Middle Ages (and through the nineteenth century) in Europe, its most well-known use has long been for varnish.

### Source

In Ms. Fr. 640, sandarac appears as "sandrax" in a recipe for producing a varnish of spike lavender oil.

#### Fol. 4r - "Varnish of spike lavender oil"

One needs to heat lavender spike oil & as it begins to simmer, put in powdered sandarac gum so that it soon melts. And over a charcoal fire stir continuously until the sandarac is well melted, which you will know by taking a little of the said varnish on a plate, and if it is fatty when you handle it with a finger, it is ready. And for one lb of lavender spike oil, you will put five ounces of pulverized sandarac, although some only put in four ounces, but this is neither so good nor so fatty. This one is promptly dry.

#### Fol. 79v - "For making varnish"

Take some mastic, sang darac, gum arabic & spike lavender oil, as much of one as the other, & make them melt all together, & before coating it, lay a coat of glue quite clear, & let it dry.

### Contributor

Clara Azemard, Matthieu Ménager, and Cathy Vieillescazes, "On the Tracks of Sandarac, Review and Chemical Analysis," *Environmental Science and Pollution Research* 24 (2017): 27746-27754.

L. Masschelein-Kleiner, "Sandarac," in *Ancient Binding Media, Varnishes and Adhesives*, trans. Janet Bridgland, Sue Walston, and A.E. Werner, 70 (Rome: ICCROM, 1985).

"Sandarac," The Conservation and Art Materials Encyclopedia (CAMEO), ed. Michele Derrick. <http://cameo.mfa.org/wiki/Sandarac>.

Image: Coloured plate of *Callitris quadrivalvis* from Köhler's *Medizinal-Pflanzen*, vol. 1 (Gera-Untermhaus: Fr. Eugen Köhler, 1887). Missouri Botanical Garden, Peter H. Raven Library.

*Helena Seo, Columbia University*

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## Citation

"Sandarac gum," *om+ka*, accessed July 16, 2025, <https://catapanoth.com/omandka/items/show/7>.

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# Gum arabic (or acacia gum)

## Dublin Core

### Title

Gum arabic (or acacia gum)

### Subject

Gum arabic (or acacia gum) is the hardened sap of one of two species of the acacia tree, *Acacia (Senegal) senegal* and *Vachellia (Acacia) seyal*, and has been used as an adhesive and the binding medium for watercolor paints. Gum arabic makes an excellent thickening agent as well as a protective substance that helps to stabilize emulsions.

### Description

Gum arabic has mainly been acquired from a species of the acacia tree in Sudan and Senegal. It has been used in food and medicine since the Middle Ages in Europe. After the fifteenth century, European seafarers discovered a copious source of gum arabic along the southern coast of the western Sahara, although gum arabic exports from this region did not begin to grow until the eighteenth century.

### Source

In Ms. Fr. 640:

Fol. 74r. - "For making varnish"

Take one pound of linseed oil, and then you will put it in a earthen pot, mixed with a crust of bread and three onions, and put it on top of a charcoal fire, and you will cook it on a little fire, so that it boils for the space of five hours. You will take half an ounce of flour glue, & you will make it boil just as before and stir with a spoon. And then, after, you will put in two ounces of well-pestered sandarac & will do as above. And then after, you will take mastic & arabic, two ounces each, which will both be well ground, and you will put everything together, & will make it boil while stirring continuously, for the space of five hours. And then you will put rock alum, two ounces, & then you will make it boil. And if you add two ounces of arabic to it, if you see that they are not cooked enough, have it cook more on a low fire until it is cooked enough...

Fol. 74v - "For making yellow varnish"

Take some gum arabic & soak it with water, then take some well beaten saffron, & temper the said gum, and make it quite clear, then make your ground layer on that which you want to varnish, & let it dry, & when it is dry give another ground layer of the same, & let it dry as

before until it is dry enough. Then take varnish from an apothecary, dash by blows, one quite far from the other. Then wash your hands quite well & with your palm spread your varnish.

#### Fol. 79v - "Making varnish"

Take some mastic, sandarac, gum arabic & spike lavender oil, as much of one as the other, & make them melt all together, & before coating it, lay a coat of glue quite clear, & let it dry.

## Contributor

Alan Davidson, "Gum Arabic," in *The Oxford Companion to Food*, ed. Tom Jaine (Oxford University Press, 2014). <https://www-oxfordreference-com.ezproxy.cul.columbia.edu/view/10.1093/acref/9780199677337.001.0001/acref-9780199677337-e-1112>.

John S. Mills, "Gum," Grove Art Online, 2003.

<https://www.oxfordartonline.com/groveart/view/10.1093/gao/9781884446054.001.0001/oao-9781884446054-e-7000035658>.

Jonathan Stephenson, "Painting medium," Grove Art Online, 2003.

<https://www.oxfordartonline.com/groveart/view/10.1093/gao/9781884446054.001.0001/oao-9781884446054-e-7000064669>.

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Michael Clarke, "Gum Arabic," in *The Concise Oxford Dictionary of Art Terms* (2 ed.) (Oxford University Press, 2010). <https://www-oxfordreference-com.ezproxy.cul.columbia.edu/view/10.1093/acref/9780199569922.001.0001/acref-9780199569922-e-839>.

Image: Colored plate of Acacia Senegal from Köhler's *Medizinal-Pflanzen* vol.1 by Walter Müller, 1887.

Helena Seo, Columbia University

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## Citation

"Gum arabic (or acacia gum)," *om+ka*, accessed July 16, 2025,  
<https://catapanoth.com/omandka/items/show/8>.

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# Gum ammoniacum

## Dublin Core

### Title

Gum ammoniacum

### Subject

Gum ammoniacum is a resin that exudes from damaged stems and roots of *Doromea ammoniacum D. Don* (Apiaceae), a perennial plant which grows in Iran, Afghanistan, and northern India.

### Source

In Ms. Fr. 640:

#### Fol. 42r - "Wax for seal and imprint"

For the large wax seals, you need to have tepid water always ready & apre keep your wax in it. But before, it should have been kneaded between your hands to render it very uniform, for otherwise the water that would get in between would prevent it from becoming uniform. Next, you will press it into whatever you want and put three or four pieces of paper on, & with a stick you even & round like a pestle, you will roll it as if you wanted to polish it, and it will attach itself to the paper, which will help you lift it off the mold. Thus you will imprint better than if you were to cast it molten. You can carve the figures & gild them, silver them, & paint them with colors in varnish, & transfer them onto a base of glass painted with colors in turpentine & mastic. And if you want to apply these plates by incrustation, do it with gum ammoniac tempered with vinegar, and you will have good glue.

At left top margin of fol. 10r - "Counterfeit jasper":

#### Fol. 10r - "Counterfeit jasper"

...You can encrust beds with it & on the joints you can throw the filings of talc or of pins on the fresh cement of the said joints. One needs to join them with gum ammoniac soaked in vinegar. To better counterfeit mottled jasper, apply wool with thick hairs dyed in diverse colors & intermingled. After you have layered all the colors, scrape oblique lines on them, then layer gold & silver leaf. If you layer on the horn colors of turpentine, give it a base of silver or of tin leaf. You can also file horn & mix it with strong glue, & layer it onto the joints of the piece of horn, then even it with a joiner's plane.

## Contributor

Hamid-Reza Adhami, Lutz J, Kählig H, Zehl M, and Krenn L., "Compounds from gum ammoniacum with acetylcholinesterase inhibitory activity," *Scientia pharmaceutica* vol. 81, 3 (Aug 2013) : 793-805.

Image: Gum ammoniacum (*Dorema ammoniacum*), ammūniyâqûn, fol. 152v by Mîrzâ Bâqir, 1889-1890. Spencer Collection, New York Public Library Digital Collections.

Helena Seo, Columbia University

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## Citation

"Gum ammoniacum," *om+ka*, accessed July 16, 2025, <https://catapanoth.com/omandka/items/show/9>.

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# Tragacanth gum

## Dublin Core

### Title

Tragacanth gum

### Subject

Tragacanth gum is a natural gum obtained from the dried sap of the *Astragalus* species (*Leguminosae* family). While it shares similar uses to gum arabic, it produces more viscous solutions and is more expensive.

### Description

Tragacanth gum is exuded from the tree *Astragalus gummifer*, which grows in desert areas. It is native to parts of Turkey and the Middle East (Iran, Iraq, Khurdistan, and Syria).

### Source

While versatile tragacanth gum was used in a variety of ways in the early modern period, such as for skin care and making sugar paste, its use as a base for stucco is unique among sixteenth-century recipes in Ms. Fr. 640:

Fol. 29r - "Stucco for molding"

Take tragacanth gum and put it to soak until, having drunk its water, it is swollen & rendered like jelly. Then grind it quite hard on marble & next take rye flour, which is better than wheat because it is more humid and does not make the paste as brittle, and sprinkle your tragacanth gum with it, & continue to grind and mix in thus, little by little, the very finely sieved flour...

### Contributor

Alan Davidson, "Gum tragacanth," in The Oxford Companion to Food, ed. Tom Jaine (Oxford University Press, 2014). <https://www-oxfordreference-com.ezproxy.cul.columbia.edu/view/10.1093/acref/9780199677337.001.0001/acref-9780199677337-e-1114>.

John S. Mills, "Gum," Grove Art Online, 2003.

<https://www.oxfordartonline.com/groveart/view/10.1093/gao/9781884446054.001.0001/oao-9781884446054-e-7000035658>.

Jonathan Stephenson, "Painting medium," Grove Art Online, 2003.

<https://www.oxfordartonline.com/groveart/view/10.1093/gao/9781884446054.001.0001/oao-9781884446054-e-7000064669>.

L. Masschelein-Kleiner, "Gum tragacanth," in *Ancient Binding Media, Varnishes and Adhesives*, trans. Janet Bridgland, Sue Walston, and A.E. Werner (Rome: ICCROM, 1985), 50.

Nina Elizondo-Garza, "Stucco for Molding," in *Secrets of Craft and Nature in Renaissance France. A Digital Critical Edition and English Translation of BnF Ms. Fr. 640*, ed. Making and Knowing Project, Pamela H. Smith, Naomi Rosenkranz, Tianna Helena Uchacz, Tillmann Taape, Clément Godbarge, Sophie Pitman, Jenny Boulboullé, Joel Klein, Donna Bilak, Marc Smith, and Terry Catapano (New York: Making and Knowing Project, 2020) [https://edition640.makingandknowing.org/#/essays/ann\\_064\\_fa\\_17](https://edition640.makingandknowing.org/#/essays/ann_064_fa_17). DOI: <https://www.doi.org/10.7916/1n6h-5f69>.

Image: Tragacanth gum, from *Relation d'un voyage du Levant* by Joseph Pitton de Tournefort (Lyon : Chez Anisson et Posuel, 1717).

*Helena Seo, Columbia University*

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## Citation

"Tragacanth gum," *om+ka*, accessed July 16, 2025, <https://catapanoth.com/omandka/items/show/10>.

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# Ambergris

## Dublin Core

### Title

Ambergris

### Subject

Ambergris is a wax-like odoriferous secretion formed in the stomach and intestines of the sperm whale (*Physeter macrocephalus*). This extremely rare and valuable substance is found inside dead whales but is more often discovered floating on beaches. The word “ambergris,” which was thought to be related to amber (the fossilized yellow resin), originates from the old French *ambre gris* or grey amber.

### Description

The origin of ambergris is still shrouded in mystery. Although it has appeared from time to time over many centuries on European shores, such as Portugal, Spain, France, and England, ambergris is not a commonly-found local substance in Europe. As an exotic animal material and a valuable commodity in high demand, ambergris was imported to Europe from distant lands, such as Asia, Africa, and the Americas via trade routes.

Ambergris was so valuable that it served as a prestigious gift among European royals and was also sometimes mentioned in inventories of wills, along with gold and silver, during the sixteenth and seventeenth centuries.

Ambergris was used as a scent fixer (as in the recipe of Ms. Fr. 640) in addition to uses in remedies, whose medicinal value was learned by Europeans from the Arabs.

### Source

In Ms. Fr. 640:

Fol. 163r – “Perfumer”

They readily put half of amber & half of musk & very little civet, because amber always overtakes the principal scent of musk.

To spare the amber, they readily put a little musk in the white layers, which gives a more forceful scent. But to remove or hide the blackness of the musk, they put in a bit of wheat starch from England, which is perfectly white.

To perfume with white amber in the Portuguese fashion, take a huchau of amber, well broken

up. And having put in a small silver bowl a spoonful of flower oil, or lacking that, ben oil, that is to say, a silver spoon that one uses at the table, put in your ambergris & place all on a low fire, and it will melt quickly if your amber is good, & it will remain there without lumps. Once all melted, put in the size of a pine nut of civet, & make it melt, & mix it well together. Next, take your gloves, well-cleaned & well-dried, & dipping the tip of your finger very lightly on the edge of the oil, spread it on the glove, little by little & with patience, & rub the glove between your hands, & trace the fingers & the stitches, one after the other. And leave it to dry. Next, trace again as before until the amber is all laid down.

## Contributor

Alan Davidson, "Ambergris," in *The Oxford Companion to Food*, ed. Tom Jaine (Oxford University Press, 2014), <https://www.oxfordreference.com.ezproxy.cul.columbia.edu/view/10.1093/acref/9780199677337.001.0001/acref-9780199677337-e-0050>.

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Emily Osterloff, "What is ambergris?" Natural History Museum. <https://www.nhm.ac.uk/discover/what-is-ambergris.html>.

Karl H. Dannenfeldt, "Ambergris: The Search for Its Origin," *Isis* 73, no. 3 (1982): 382–97.

Matthew Wills, "What is Ambergris and Where Does It Come From?" J Stor Daily (Dec. 9, 2015). <https://daily.jstor.org/what-is-ambergris-and-where-does-it-come-from/>.

Image: Miniature illustration of a sperm whale complementing a text discussing ambergris in medieval manuscript. Salerno, Italy.

*Helena Seo, Columbia University*

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## Citation

"Ambergris," *om+ka*, accessed July 16, 2025, <https://catapanoth.com/omandka/items/show/11>.

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# Civet (*Civette*)

## Dublin Core

### Title

Civet (*Civette*)

### Subject

The term civet comes from the Arabic word *zabad* and refers to the fluid secretion obtained from the glands of the civet cat, mostly of the Viverridae species. The aromatic civet has a long history of being used as an ingredient in perfumery, dating back to at least the tenth century BC, and it also has curative properties.

### Description

Despite the Europeans' awareness of the civet cat in the early fifteenth century, it was not until the sixteenth and seventeenth centuries that civet would increasingly acquire its fame and come to be imported into Europe with the expansion of European exploration.

In 1470, the Portuguese monopolized Guinea's civet cats, from which they made considerable profit. Late fifteenth- and sixteenth-century sources indicate Europeans' "discovery" of civet cats in East Africa, particularly Ethiopia, as well as in India and China. Thus, various species of the civet cat had become available to European merchants by the beginning of the seventeenth century.

### Source

In Ms. Fr. 640, civet is used in combination with other scents of animal origin, such as ambergris and musk, for making perfume.

Fol. 163r – "Perfumer"

They readily put half of amber & half of musk & very little civet, because amber always overtakes the principal scent of musk.

To spare the amber, they readily put a little musk in the white layers, which gives a more forceful scent. But to remove or hide the blackness of the musk, they put in a bit of wheat starch from England, which is perfectly white.

To perfume with white amber in the Portuguese fashion, take a huchau of amber, well broken up. And having put in a small silver bowl a spoonful of flower oil, or lacking that, ben oil, that is to say, a silver spoon that one uses at the table, put in your ambergris & place all on a low fire, and it will melt quickly if your amber is good, & it will remain there without lumps. Once

all melted, put in the size of a pine nut of civet, & make it melt, & mix it well together. Next, take your gloves, well-cleaned & well-dried, & dipping the tip of your finger very lightly on the edge of the oil, spread it on the glove, little by little & with patience, & rub the glove between your hands, & trace the fingers & the stitches, one after the other. And leave it to dry. Next, trace again as before until the amber is all laid down.

## Contributor

Chris Wemmer, "Civets and Genets," in The Encyclopedia of Mammals (Oxford University Press, 2006),  
<https://www.oxfordreference.com.ezproxy.cul.columbia.edu/view/10.1093/acref/9780199206087.001.0001/acref-9780199206087-e-30>.

Karl H. Dannenfeldt, "Europe Discovers Civet Cats and Civet." *Journal of the History of Biology* 18, no. 3 (1985): 403–31.

Image: Joris Hoefnagel, Plate 14: A Civet, a Lynx, and a Hyena, from *Animalia Quadrupedia et Reptilia (Terra)*, watercolor and gouache on vellum, c. 1575/1580.

\*The top figure labeled #1 represents civet.

Helena Seo, Columbia University

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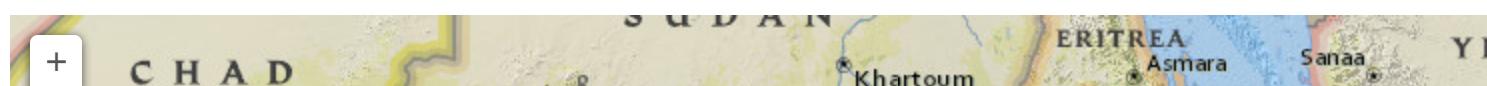
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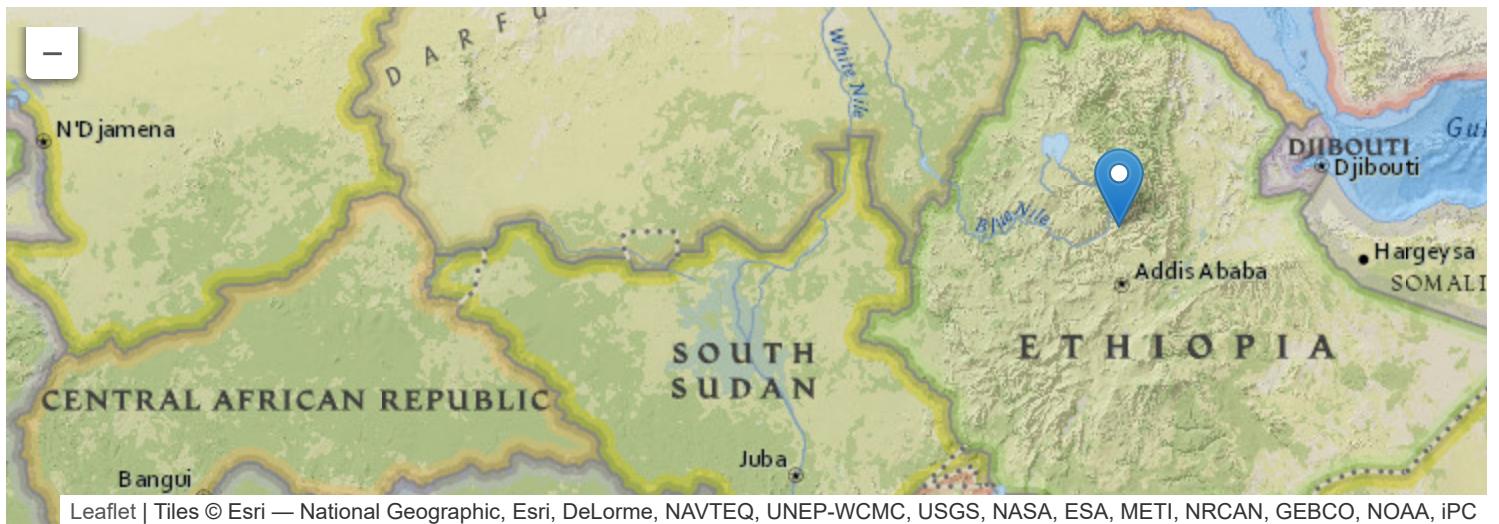
"Civet (Civette)," *om+ka*, accessed July 16, 2025, <https://catapanoth.com/omandka/items/show/12>.

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# Musk

## Dublin Core

### Title

Musk

### Subject

Musk is a secretion extracted from a scent gland of the male deer *Moschus moschiferus L.*

### Description

Musk oil, obtained from the musk deer, native to the Himalaya area (including India and China) was shipped to Europe through Islamic lands during the Renaissance.

Scents of animal origin, including musk and two other ingredients made from animal products mentioned in Ms. Fr. 640 - civet and ambergris - were very popular during the Renaissance for their powerful olfactory properties.

### Source

In Ms. Fr. 640:

Fol. 163r – “Perfumer”

They readily put half of amber & half of musk & very little civet, because amber always overtakes the principal scent of musk.

To spare the amber, they readily put a little musk in the white layers, which gives a more forceful scent. But to remove or hide the blackness of the musk, they put in a bit of wheat starch from England, which is perfectly white.

To perfume with white amber in the Portuguese fashion, take a huchau of amber, well broken up. And having put in a small silver bowl a spoonful of flower oil, or lacking that, ben oil, that is to say, a silver spoon that one uses at the table, put in your ambergris & place all on a low fire, and it will melt quickly if your amber is good, & it will remain there without lumps. Once all melted, put in the size of a pine nut of civet, & make it melt, & mix it well together. Next, take your gloves, well-cleaned & well-dried, & dipping the tip of your finger very lightly on the edge of the oil, spread it on the glove, little by little & with patience, & rub the glove between your hands, & trace the fingers & the stitches, one after the other. And leave it to dry. Next, trace again as before until the amber is all laid down.

## Contributor

Alan Davidson, "Musk," in *The Oxford Companion to Food*, ed. Tom Jaine (Oxford University Press, 2014), <https://www.oxfordreference.com.ezproxy.cul.columbia.edu/view/10.1093/acref/9780199677337.001.0001/acref-9780199677337-e-1637>.

Anya H. King, *Scent From the Garden of Paradise: Musk and the Medieval Islamic World*. (Leiden: Brill, 2017).

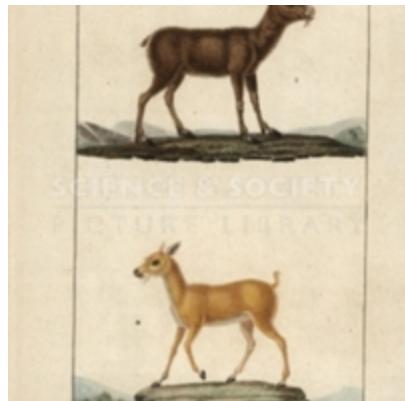
Karl H. Dannenfeldt, "Europe Discovers Civet Cats and Civet," *Journal of the History of Biology* 18, no. 3 (1985): 403–31.

S. Sathyakumar, "Musk Deer," in *The Encyclopedia of Mammals* (Oxford University Press, 2006), <https://www.oxfordreference.com.ezproxy.cul.columbia.edu/view/10.1093/acref/9780199206087.001.0001/acref-9780199206087-e-94>.

Image: Siberian musk deer, *Moschus moschiferus* (top) and dwarf musk deer or Chinese forest musk deer, *Moschus berezovskii* (bottom), from *Dictionary of Natural Science: Mammals* by Frederic Cuvier (Paris, 1816). Hand-colored copperplate stipple engraving. Science & Society Picture Library.

*Helena Seo, Columbia University*

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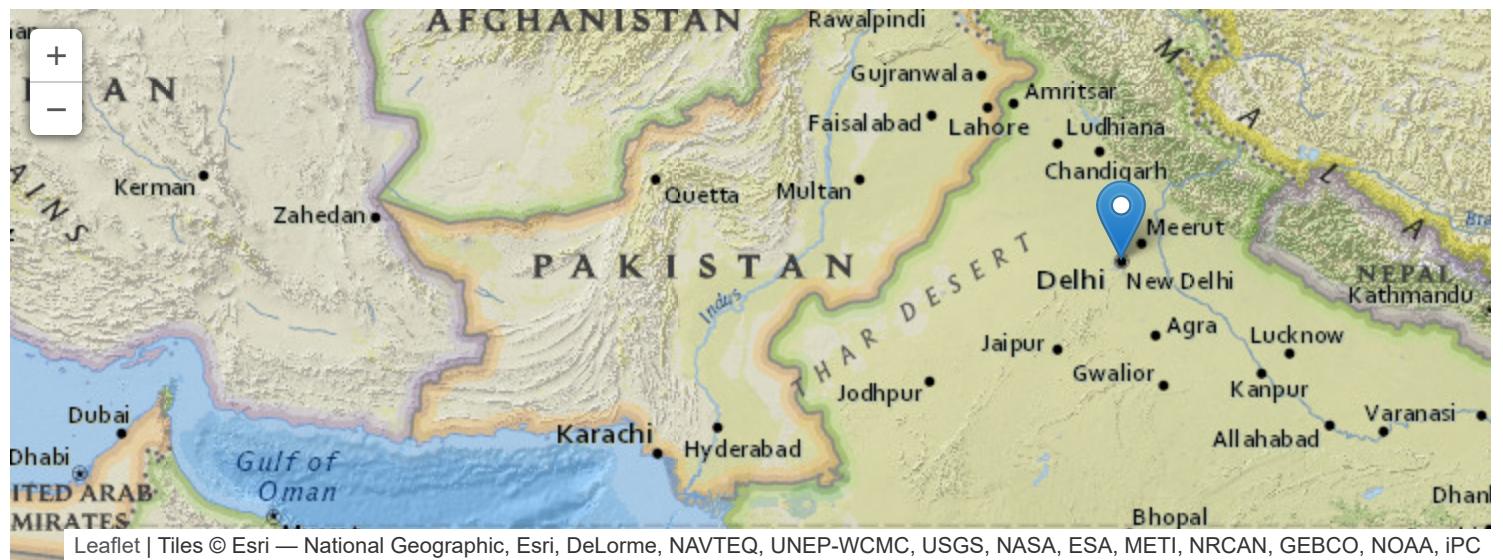
"Musk," *om+ka*, accessed July 16, 2025, <https://catapanoth.com/omandka/items/show/13>.

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# Clove

## Dublin Core

### Title

Clove

### Subject

Clove is a spice derived from the dried, unopened flower buds of the evergreen tree *Syzygium aromaticum*.

### Description

Clove is native to the Maluku Islands in eastern Indonesia. It was in use in China as early as the third century BCE, and has been used in India since ancient times. Between the second and eighth centuries CE, it was spread from Egypt throughout the Mediterranean region.

In 1514, the Portuguese gained control of the Maluku Islands and maintained a monopoly over the clove trade until the Dutch wrestled the islands from them about a century later. The Dutch restricted the cultivation of cloves to the single island of Amboina and the penalty for taking them elsewhere was death. The French sought to break the monopoly in the seventeenth century by securing plants in Mauritius and began to succeed towards the end of the eighteenth century. This practice led to clove plantations in Madagascar and Zanzibar (archipelago of present day Tanzania). Today, the main regions of clove cultivation remain Indonesia, Madagascar, and Tanzania.

### Source

In Ms. Fr. 640:

Fol. 46r - "For the teeth, oil of sulfur"

Some people whiten them with confections of aquafortis; however, one says that this corrupts them afterward & causes a blackness on them. One says that oil of sulfur is excellent, but one needs to mix it in this way: take as much clove oil as can be held in a walnut shell, and as much rose honey, & seven or eight drops of oil of sulfur, & mix it well all together. And after having cleaned the teeth with a small burin, touch them lightly with a little cotton dipped in the aforesaid oils and leave it there for a little while, then spit or rinse your mouth with tepid water, and reiterate two or three times. Oil of sulfur penetrates & is corrosive, but the clove oil & the rose honey correct it. Therefore use it with discretion.

### Fol. 47r - "For teeth"

Sal ammoniac i ȝ, rock salt 1 ȝ, alum half an ȝ. Make water with the retort, and as soon as you touch the tooth, the tartar & blackness will go away. It is true that it has a bad odor, but you can mix it with rose honey & a little\* cinnamon or clove oil.

### Fol. 48r - "Excellent mustard"

Dry bread in an oven, then lard it with cloves & cinnamon & thus put it to soak in good wine. Then, pass everything through a tammy cloth, being well pestled, & incorporate it with your mustard seed.

## Contributor

Alan Davison and Tom Jaine, eds., "Clove," *The Oxford Companion to Food* (2 ed.), 2013, <https://www.oxfordreference.com/view/10.1093/acref/9780192806819.001.0001/acref-9780192806819-e-0575?rskey=IG7C8D&result=4>.

"Clove," *World Encyclopedia* (Philip's, 2014),

<https://www.oxfordreference.com/view/10.1093/acref/9780199546091.001.0001/acref-9780199546091-e-2545?rskey=IG7C8D&result=6>.

Image: Forem, "Clove Tree; The Philippine Islands; a Political, Geographical, Ethnographical, Social and Commercial History of the Philippine Archipelago, Embracing the Whole Period of Spanish Rule, with an Account of the Succeeding American Insular Government," Artstor (Cornell University Library, 1700/1709), [https://library.artstor.org/asset/CORNELL\\_ECHOLS\\_1039407373](https://library.artstor.org/asset/CORNELL_ECHOLS_1039407373).

*Elia Zhang, Columbia University*

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# Silkworm

## Dublin Core

### Title

Silkworm

### Subject

The silkworm is a moth caterpillar of the genus *Bombyx* that is cultivated to produce silk. Its diet consists mostly of mulberry leaves. After it spins a silk cocoon, the pupae can be placed in boiling water to unravel the silk thread.

### Description

The silkworm was domesticated in China by 3000 BCE, and silk became a major trade good between Xi'an in central China and the eastern Mediterranean, carried by caravans across ancient routes that span the Taklamakan Desert. Known as the Silk Road, this route was established during the period of the Roman Empire. The smuggling of silkworms from China to Central Asia has been recorded since the second century BCE.

Silk manufacturing was widely spread throughout India, Persia, Arabia, and Europe. According to the romanticized account by Greek scholar Procopius (ca. 500–565), the knowledge of silkworm cultivation was kept a secret by the Chinese for a long time until silkworm eggs were “stolen” by certain Indian monks induced by Justinian Augustus in the sixth century CE. After they brought the eggs and the method of silk production to Byzantium, silk making began in the Roman empire. It is unknown how factual this version is or whether it is purely legend.

During the medieval period and the Renaissance, silk remained a luxury material in Europe, and its production was dominated by Italian merchants. Sericulture was introduced into Spain, Sicily, and Calabria as part of the Islamicate empire. In the eleventh century, Jewish artisans introduced the technique of silk-weaving to central Italy. In the early 1200s, it was estimated that skilled Greek and Muslim captives brought the techniques of silk-weaving to Venice, Milan, and Genoa. Throughout the thirteenth century, silk-weaving was established in Bologna, Florence, Pisa, and Arezzo. In the fourteenth century, during the exile of silk workers in the wake of political factionalism, the technique was carried over the Alps to France and Germany. By the fifteenth century, sericulture was practiced in southern France. Tours was the first city in France to have established a sizable silk production industry. In the seventeenth century, then superintendent of finance Jean-Baptiste Colbert launched an ambitious scheme to promote textile industries both inside France and in its colonies. Lyon later became France's largest city of silk production.

## Source

In Ms. Fr. 640:

Fol. 52r - "The work done in Algiers"

...Around the feast of St. John, put into it a dozen & a half chicken eggs, that is to say, the yolk without the glair & the (germ) see). Others say lx yolks. And with this dozen & a half egg yolks put in half an ounce (others say for lx eggs half a lb) of female silkworm seeds. And after having luted the mattras well (I do not know if it is at all necessary for the generation that there be air), put it & bury it in the heat of the dung up to the neck, and leave it there until several worms are engendered...

Folio 53v-54r - "Silkworms"

They are produced from seed, that is to say eggs, that which is sold by the ounce, which is commonly sold in Languedoc iii lb v s. The one from Spain that merchants bring there is considered the best because the worms which come from there are not so subject to illnesses & make more silk. In Spain, from one ounce of seed, worms are produced from it which commonly yield xv lb of silk. But from one ounce of seed produced in France, only x or xii come out of it...

## Contributor

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Helen Saberi, "Silkworm," ed. Alan Davidson and Tom Jaine, *The Oxford Companion to Food* (2 ed.) (Oxford University Press, 2013),  
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Roy C. Cave and Herbert H. Coulson, *A Source Book for Medieval Economic History* (The Bruce Publishing Company, 1936), Access provided by HathiTrust Digital Library,  
<https://babel.hathitrust.org/cgi/pt?id=uiug.30112051326327&view=1up&seq=11&skin=2021>.

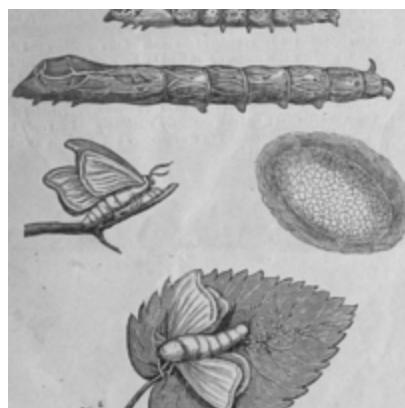
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Sasha Grafit, "Silkworms and the Work of Algiers," in *Secrets of Craft and Nature in Renaissance France. A Digital Critical Edition and English Translation of BnF Ms. Fr. 640*, ed. Making and Knowing Project, Pamela H. Smith, Naomi Rosenkranz, Tianna Helena Uchacz, Tillmann Taape, Clément Godbarge, Sophie Pitman, Jenny Boulboullé, Joel Klein, Donna Bilak, Marc Smith, and Terry Catapano (New York: Making and Knowing Project, 2020),  
[https://edition640.makingandknowing.org/#/essays/ann\\_059\\_sp\\_17](https://edition640.makingandknowing.org/#/essays/ann_059_sp_17). DOI:  
<https://www.doi.org/10.7916/adew-hy48>.

Image: "Silkworm." American Antiquarian Society (AAS) Historical Periodicals, Vol. 1 Issue 1, Albany, N.Y., 1835. Access provided by Columbia University Library. <https://search.ebscohost.com/login.aspx?direct=true&db=h9i&AN=47735626&site=ehost-live&scope=site>.

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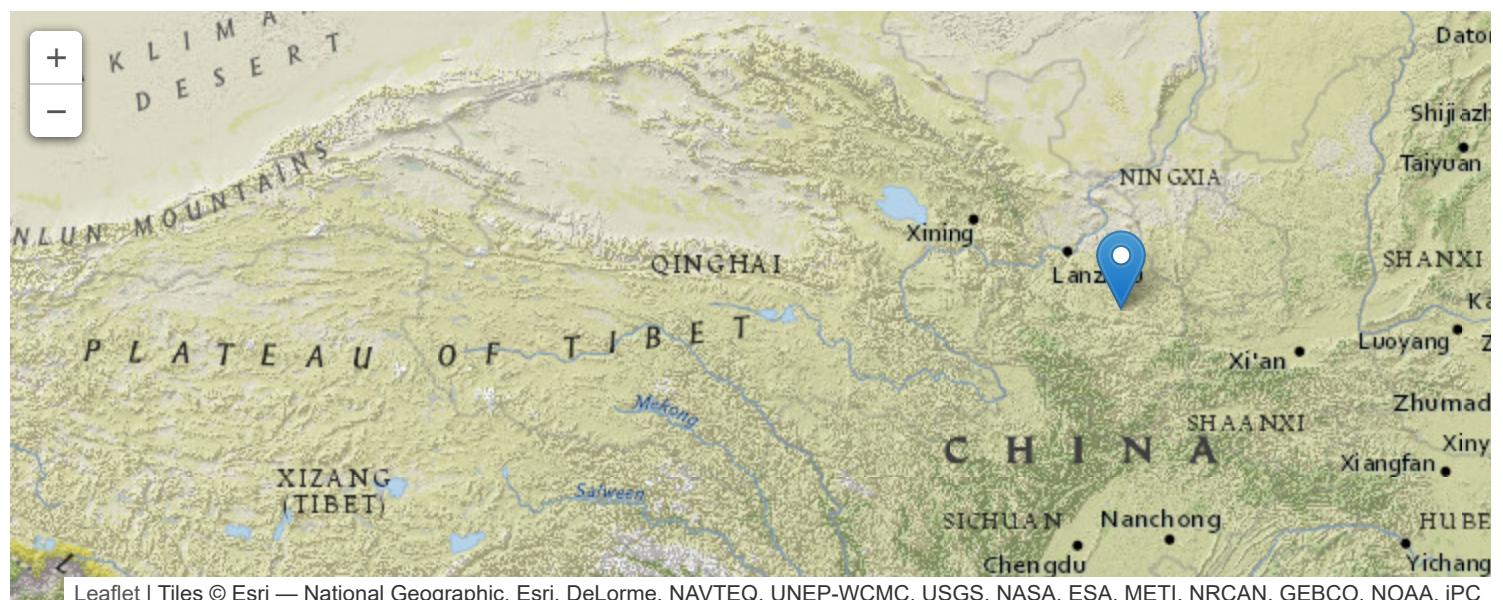
## Citation

"Silkworm," *om+ka*, accessed July 16, 2025, <https://catapanoth.com/omandka/items/show/15>.

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# Fenugreek

## Dublin Core

### Title

Fenugreek

### Subject

Fenugreek, *Trigonella foenum-graecum*, is a plant in the pea family. Fenugreek seed is yellow and brown in color, and is frequently used in India for making curries.

### Description

Fenugreek is native to Southern Europe and Asia. In classical times, it was well known in Europe for the medicinal properties of its seeds. Evidence also shows that fenugreek was used for culinary purposes in ancient Egypt.

### Source

In Ms. Fr. 640:

Fol. 52r - "The work done in Algiers"

Take a colt of three or 4 years & feed it on rye barley & straw pig cut in the manner one feeds horses in Spain, and water it with good fountain or river water. I do not know if it would be good to water it occasionally with water of sulfurous baths, & to sometimes give it fenugreek or other hot foods, for the intention of the worker is to it to use the heat of its dung, & the climate here is cooler than that of Algiers...

### Contributor

Alan Davidson and Tom Jaine, eds., "Fenugreek," *The Oxford Companion to Food* (3 ed) (Oxford University Press, 2014),  
<https://www.oxfordreference.com/view/10.1093/acref/9780192806819.001.0001/acref-9780192806819-e-2129?rskey=j1yQNk&result=2>.

Image: Zakariya ibn Muhammad Qazwini and Muhammad ibn Muhammad Shakir Ruzmah-i Nathani.  
Illustration: "Fenugreek, Chickpea, and Melilot, Leaf from Turkish Version of the Wonders of Creation",  
Text Title: "Tercüme-yi 'Aca'ib ül-mahlukat," (1121 AH/AD 1717 [Ottoman]) (The Walters Art Museum,

Acquired by Henry Walters, 1931), [https://library-artstor-org.ezproxy.cul.columbia.edu/asset/AWALTERSIG\\_10313537049](https://library-artstor-org.ezproxy.cul.columbia.edu/asset/AWALTERSIG_10313537049).

Elia Zhang, Columbia University

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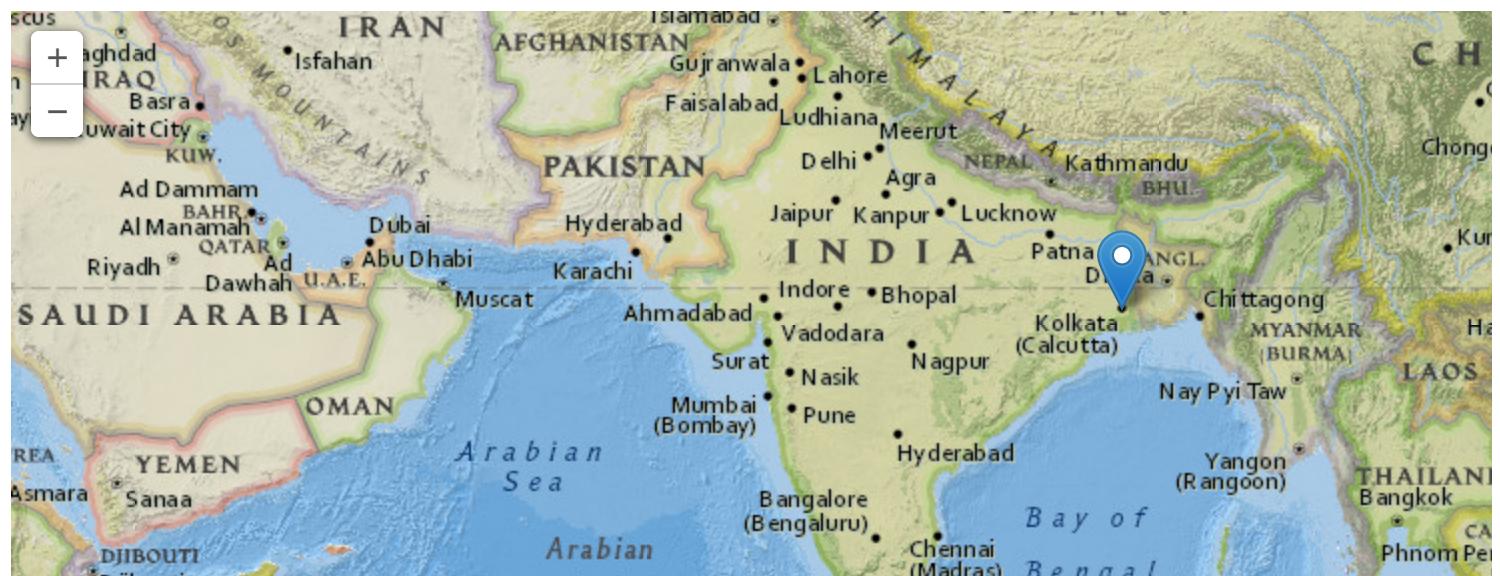
## Citation

"Fenugreek," *om+ka*, accessed July 16, 2025, <https://catapanoth.com/omandka/items/show/16>.

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# Candy Sugar

## Dublin Core

### Title

Candy Sugar

### Subject

In the fourteenth century, the word “candy” was an alternative form of the word “candi,” which referred to crystallized sugar. The use of the meaning “candy” in French (*la canne*) did not appear until the twentieth century, when Gaston-Martin wrote *Histoire de l'esclavage dans les colonies françaises* in 1948.

Studies of sixteenth-century painted miniatures show that dissolved sugar candy was added to the binding medium (usually, gum arabic) to influence how the paint dried and how some colors looked in the final painting. This application of sugar candy is described in Nicholas Hilliard’s *A Treatise Concerning the Arte of Limning* (ca. 1600) as well as in Ms. Fr. 640.

### Description

In the early modern period, sugar production was mainly focused on cane sugar collected from the stalks of tall grasses in the genus *Saccharum*. During the late medieval period, large-scale sugar production developed in the Mediterranean, especially in Crete and Cyprus. In the second half of the fifteenth century, production moved to the Atlantic islands, particularly Madeira. In the late sixteenth century and early seventeenth century, production shifted again to coastal Brazil. In the late seventeenth century, the French colonies in the Caribbean became the so-called “sugar islands,” and sugar became the most important plantation crop next to tobacco. By the late nineteenth century, sugar production was globalized.

### Source

In Ms. Fr. 640:

Fol. 6r - "For laying down and seating burnished gold and giving red or green or blue"  
...Some put in a little candy sugar. Grind all together with water, & apply it without gum or glue, & let it dry, & rub the place that you want to gild with a piece of white cloth to better smooth it, & when the rubbed place is a little shiny, it is a sign that the gold will be carried well...

Fol. 32r - "For layering gold in distemper"

Common painters & scribes make batture, that is joiner's glue tempered with water on the fire, moderately clear, mixed with very little honey, that is to say a few drops to make it stick. And with it they form letters, or that which they want to gild, with a paintbrush, and immediately after layer the gold, but they never do their work quite neatly, and if there is a lot of honey it dries only with great difficulty. This layer is undone in the rain.

Others do better, they temper candy sugar in water and mix it with sanguine that they call cocon, thoroughly ground, adding in a little soap. This is done neatly, & renders gold beautiful if one uses it as the seat.

## Contributor

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Christine Slottved Kimbriel and Paola Ricciardi, "A Closer Look at the Cabinet Miniature of Lord Herbert of Cherbury," National Trust, <https://www.nationaltrustcollections.org.uk/article/a-closer-look-at-the-cabinet-miniature-of-lord-herbert-of-cherbury>.

Jason W. Moore, "Sugar and the Expansion of the Early Modern World-Economy: Commodity Frontiers, Ecological Transformation, and Industrialization," Review, Fernand Braudel Center, 2000, <http://www.jstor.org/stable/40241510>.

Image: Sir John Bowring, "The beautiful tall reeds of the sugar cane, their pennon-like leaves gleaming in the sunshine," J.W. Parker and son, London, 1857; Cornell University Library, 1900/1919, Artstor, [https://library.artstor.org/#/asset/CORNELL\\_ECHOLS\\_1039405990](https://library.artstor.org/#/asset/CORNELL_ECHOLS_1039405990).

*Elia Zhang, Columbia University*

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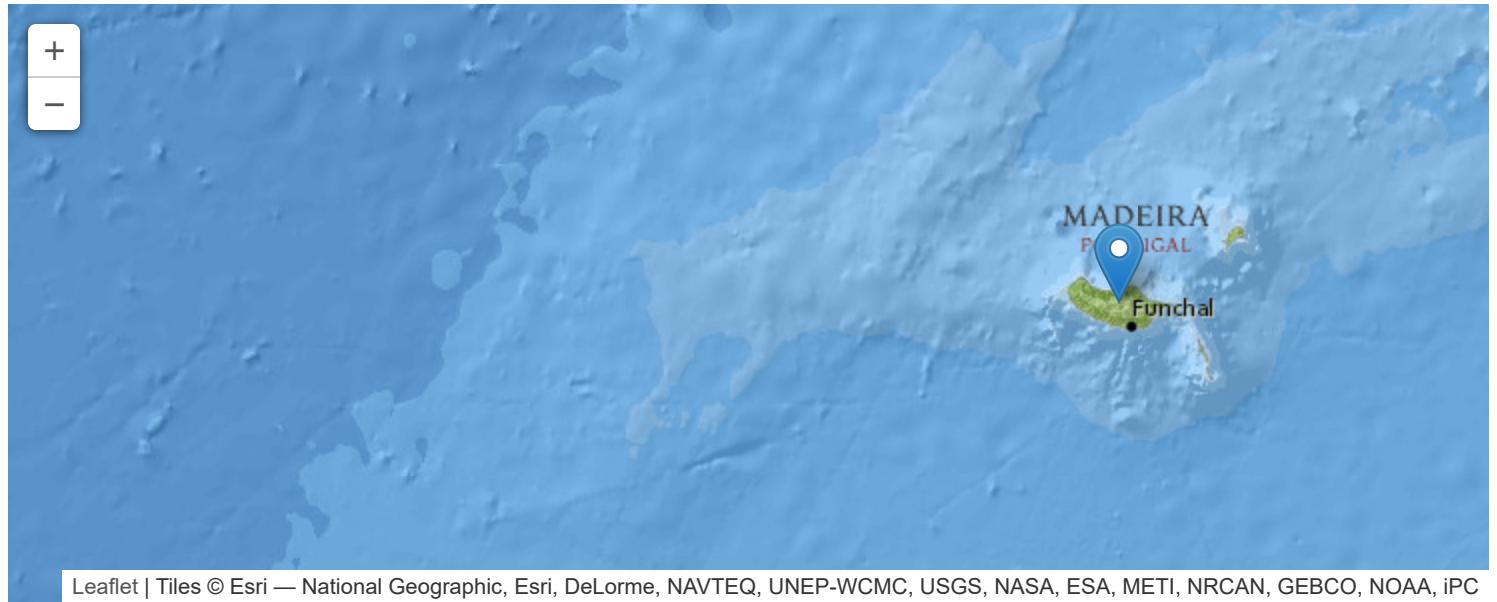
## Citation

"Candy Sugar," *om+ka*, accessed July 16, 2025, <https://catapanoth.com/omandka/items/show/17>.

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# Lac

## Dublin Core

### Title

Lac

### Subject

A brownish resinous material produced on twigs of certain trees, such as several species of soapberry and acacia trees, by the female lac insect, *Laccifer lacca* (or *Kerria lacca*), indigenous to India.

### Description

The term “lac” originates from Hindi and Sanskrit words, respectively *lakh* and *laksha*, which mean “hundred thousand,” referring to the large quantity of insects needed to produce enough lac material.

Used as early as around 1200 BCE in India, lac was employed in making sealing wax, dye, and varnish (like shellac). In the seventeenth century, Europe began to import shellac and lac dye, for which lac was particularly valued as a dark red colorant.

### Source

Lac lends its name to lake pigments, a broader term for a number of colorants derived from organic sources such as plants or animals. This more general meaning is found in Ms. 640:

*Lacque platte* – dried lake pigment, formed into a flat shape for storage and sale (flat squares or tablets).  
*Lacque ronde* – dried lake pigment, shaped into round beads for storage and sale.

Fol. 40v - “Cross of the commanders of Malta”

This beautiful rouge clair which makes the field of the white enamel cross is of fine tear of dragon’s blood tempered with eau-de-vie or else Indian laque platte, which in my opinion is made in Flanders, tempered with clear turpentine & tear of mastic & laid down on a silver leaf, not the kind which the painters use, but a thicker kind, which is burnished by those who make gemstone foils or by goldsmiths, & that gives it this beautiful brilliance.

Fol. 6r - “For laying down and seating burnished gold and giving red or green or blue” ...

Having rubbed, wash with a clean paintbrush soaked in clear water the place that you want to gild & immediately apply the gold, which you will burnish once dry. And if you want to lay in rouge clair & glaze with it de, grind Venice laque platte on marble with walnut or linseed oil.

Once ground, mix turpentine or spike lavender varnish & apply on the gold with the paintbrush. Brazilwood & laque ronde die...

#### Fol.3r - "Counterfeit coral"

One needs to first make the branches of wood or take a bizarre thorn branch, then melt a lb of the most beautiful clear pitch resin and put in one ounce of subtly ground vermillion with walnut oil, and if you add in a little Venice laque platte, the color will be more vivid, and stir everything in the resin melted over a charcoal fire and not of flame, for fear that it catches fire. Next dip in your branches while turning, & if any filaments should remain on it, turn the branch over the heat of the charcoal.

## Contributor

Donald F. Lach, "The Individual Arts," in *Asia In the Making of Europe*, Vol. 2, Book 1 (Chicago: The University of Chicago Press, 1965).

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Jo Kirby and Marika Spring, "Ms. Fr. 640 in the World of Pigments in Sixteenth-Century Europe," in *Secrets of Craft and Nature in Renaissance France. A Digital Critical Edition and English Translation of BnF Ms. Fr. 640*, ed. Making and Knowing Project, Pamela H. Smith, Naomi Rosenkranz, Tianna Helena Uchacz, Tillmann Taape, Clément Godbarge, Sophie Pitman, Jenny Boulboullé, Joel Klein, Donna Bilak, Marc Smith, and Terry Catapano (New York: Making and Knowing Project, 2020) [https://edition640.makingandknowing.org/#/essays/ann\\_321\\_ie\\_19](https://edition640.makingandknowing.org/#/essays/ann_321_ie_19). DOI: <https://www.doi.org/10.7916/vsrt-8r31>.

"Lac." The Conservation and Art Materials Encyclopedia (CAMEO), ed. Michele Derrick. <http://cameo.mfa.org/wiki/Lac>.

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Image: Drawing of the insect Kerria lacca and its shellac tubes, from *Indian Insect, Life: a Manual of the Insects of the Plains (Tropical India)* by Harold Maxwell-Lefroy (Calcutta; Thacker, Spink & Co., W. Thacker & Co., 2 Creed Lane, London, 1909). NCSU Libraries ([archive.org](https://archive.org/details/indianinsect00maxw)).

Helena Seo, Columbia University

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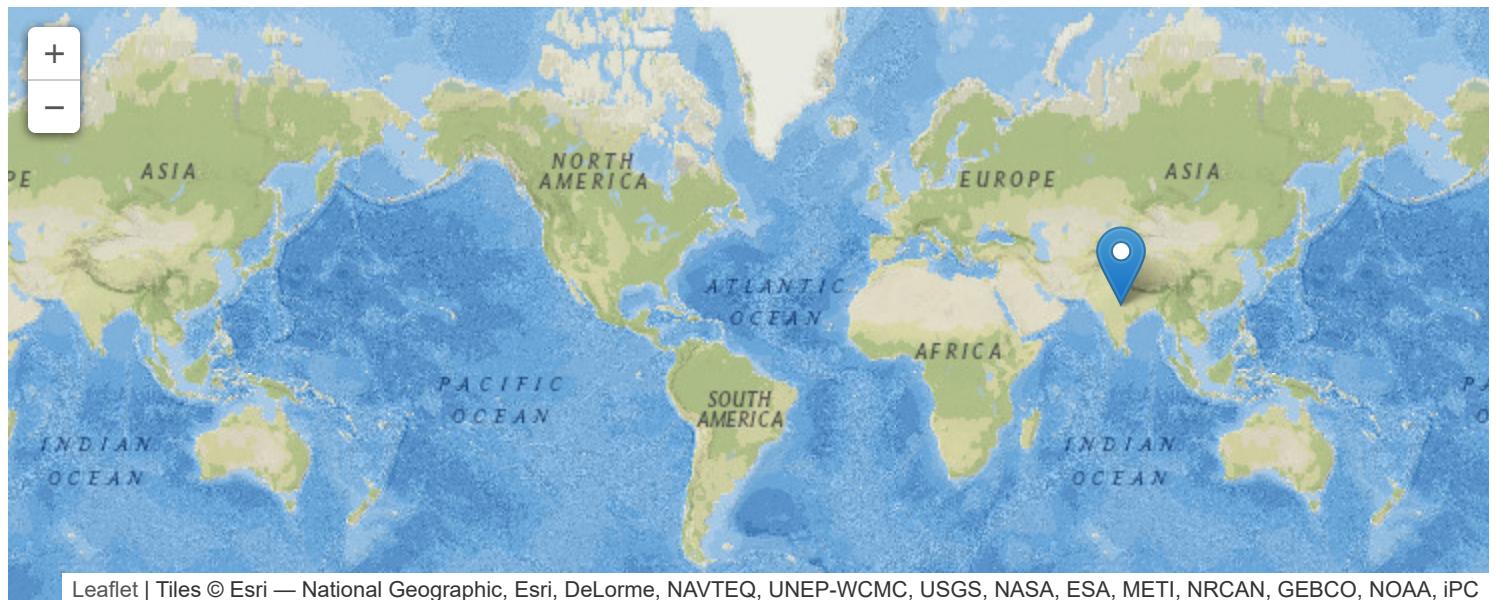
## Citation

"Lac," *om+ka*, accessed July 16, 2025, <https://catapanoth.com/omandka/items/show/18>.

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# Dragon's blood

## Dublin Core

### Title

Dragon's blood

### Subject

Dragon's blood is the reddish dried resin derived from different species of a number of the plant genera generally known as the "Dragon Tree."

### Description

Dragon's blood, obtained from the species *Dracaena draco*, *Dracaena cinnabari*, and likely *Daemonorops draco* from the island of Sokotra, was available in Europe since at least the first century CE. Later, with the expansion of European voyages, the resin was also obtained from *Dracaena draco* from the Canary Islands in the fifteenth and sixteenth centuries.

Although not as popular as brazilwood, cochineal, and vermilion, dragon's blood was used as a colorant to create a red pigment throughout the medieval and early modern periods.

### Source

Dragon's blood is used in a wide variety of applications in seven recipes in Ms. Fr. 640. It is used as a remedy as well as an ingredient in colored varnishes.

When soaked in spirits, it can be used as a glue, and, as the title of the recipe implies, this glue would be used to connect two halves of an imitation gem to make a "doublet."

Fol. 7r - "Doublets"

Good dragon's blood soaked in eau-de-vie carries its mastic or glue in itself, as do sap green & saffron.

The material is fully introduced in this recipe, which explains how to prepare dragon's blood for use—as in the "doublet" recipe, many applications require that it be soaked in alcohol—and how to select good quality samples for purchase.

Fol. 29v - "Dragon's blood"

The darker dragon's blood is the best & has more of a tint; it is the tear that is found in gr

pieces like peas and large hazelnuts which look like [illustration].

Take a well chosen tear of it which shows off its transparent red. And in a glass bottle put the best eau-de-vie you can find, in sufficient quantity. For it And stop it well and so diligently that it does not vent, otherwise it would be worth nothing. And leave it thus for a long time, because the longer it stays there, the more beautiful & better it will be & it will dissolve if it is good, otherwise it will become like wine lees. When you want to use it, make a small hole in the stopper of the bottle & pour a little & stop it again each time, then apply it on gold.

The good kind of dragon's blood can be found in large pieces like pieces of cake this one has no value and is adulterated, & once broken it shows on its edges scales, transparent as rouge clair enamel, it is also lumpy in some parts like small rubies. The eau-de-vie needs to be very ardent & passed\* several times.

Instructions to stop a bleeding nose by applying a powder of dragon's blood (medical use).

Fol. 38v - "Against nosebleed and for dyeing"

Pestle some sorrel or lapathum acutum\* of the sort that is red-veined, which is called dragon's blood, and apply it to the forehead of the one who bleeds. This herb is a strong dye & makes beautiful violet.

The recipe gives detailed instructions for producing a shiny, enamel-like material from a dragon's blood solution, and applying it to silver sheets, presumably in order to make the eponymous cross.

Fol. 40v - "Cross of the commanders of Malta"

This beautiful rouge clair which makes the field of the white enamel cross is of fine tear of dragon's blood tempered with eau-de-vie or else Indian laque platte, which in my opinion is made in Flanders, tempered with clear turpentine & tear of mastic & laid down on a silver leaf, not the kind which the painters use, but a thicker kind, which is burnished by those who make gemstone foils or by goldsmiths, & that gives it this beautiful brilliance.

The recipe gives a similar recipe for a varnish that, colored with dragon's blood, can be used as a red-tinted coating for wood.

Fol. 98r - "Varnish for lutes"

They take a little turpentine, & oil of turpentine or of spike lavender, & amber pulverized & passed very subtly, & make like that of mastic, & add in a little dragon's blood to color it and make it reddish, and others some terra merita for yellow.

This is the only explicit use of dragon's blood as a colorant, but, as in other recipes, it is used particularly for application on a material other than a canvas or panel, and it is used in combination with metal leaf.

Fol. 102v - "Painting on crystal or glass"

They paint in oil without lines, except for the faces where they trace the nose & the mouth with black in small work, then they make strokes & highlights in white, next they coat all with flesh color. And as for the ground, they make it with azur d'Acre for more beauty, or with lake for a quickly-done red, or with dragon's blood for the most beauty. But one needs to layer it little by little so that it appears even & of one color, & thus for other colors. Next, they put underneath it a foil backing for topaz, or one of gold or silver.

Instructions here are for imitating the visual effect of dragon's blood on gold or silver by using lake pigment, and do not involve the material itself.

Fol. 165r – “Dragon’s blood”

It can be imitated with lake, which surpasses the dragon's blood in beauty if, tempered in oil, you glaze on gold or silver. Tempered in varnish, it dies.

## Contributor

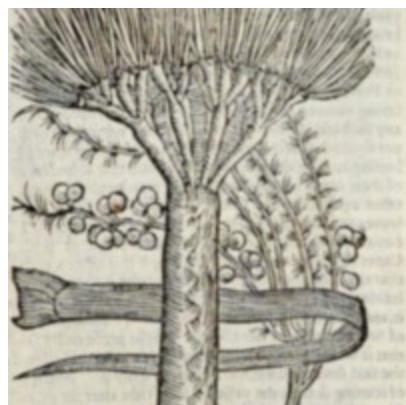
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Image: An engraving depicting *Draco arbor*. The Dragon Tree, from "Theatrum Botanicum" ("The Theater of Plants: Or, An Herball of a Large Extent...") by John Parkinson (London, 1640). Research Library, The Getty Research Institute ([archive.org](https://archive.org)).

*Helena Seo, Columbia University*

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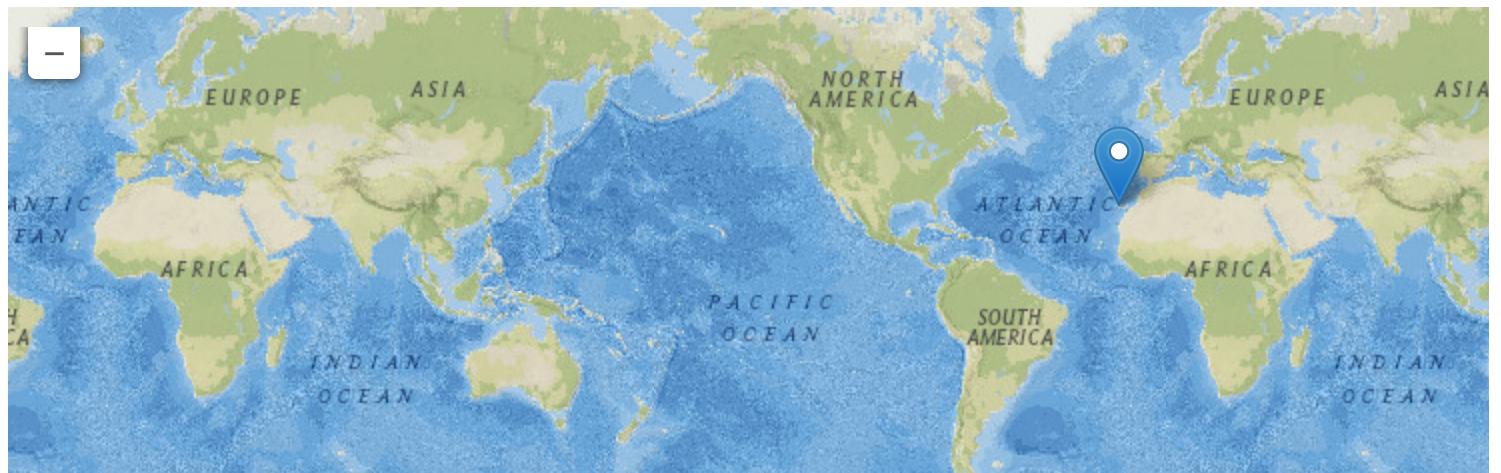
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## Output Formats

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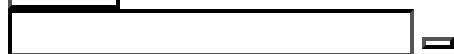
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# Storax/styrax

## Dublin Core

### Title

Storax/styrax

### Subject

Storax, also called styrax, is a fragrant gum resin obtained from the genus *Liquidambar*, especially *L. orientalis*. It has been used mainly in medicines and perfumes. A similar resin, also called storax or styrax benzoin, is derived from various tree species in the genus *Styrax*. It too is a fragrant gum used in perfumes and incense.

### Description

*Liquidambar orientalis* comes from Turkey. It is also known as "Turkish sweetgum". It is widely distributed across southwestern Anatolia nowadays.

Benzoin styrax is found across Southeast Asia and in particular the island of Sumatra.

As early as the 6th century, storax was transported from Egypt to Rome for use in churches. It was one among a large quantity of aromatics that were imported to Rome. According to a recently-edited manuscript of the tenth-century Egyptian Muhammad b. Ahmad al-Tamīmī, storax was also used in dyeing recipes along with saffron, sandalwood, and musk during that time. In the early modern and modern period, storax is recorded in Mexican pharmacies during Spanish colonial rule. It belonged to the European medicinal corpus that was brought to the New World.

### Source

In Ms. Fr. 640:

Fol. 7v - "For relieving the pain of G."

Take half a lb of finely pulverized golden & yellow marcasite, half an ounce of storax, 4 lb of urine, incorporate everything well together, little by little, in a mortar, then boil all together quite thoroughly. But the pot needs to be well covered in order that the fumes do not exhale. Next distill the urine, imbibed & separated by inclination, in an alembic, well-luted & covered with a copper helmet & soak a linen cloth with the said water & apply it lukewarm on the pain.

## Contributor

Nicole Basile, "Gout or Gonorrhea? The Riddle of G." in *Secrets of Craft and Nature in Renaissance France. A Digital Critical Edition and English Translation of BnF Ms. Fr. 640*, ed. Making and Knowing Project, Pamela H. Smith, Naomi Rosenkranz, Tianna Helena Uchacz, Tillmann Taape, Clément Godbarge, Sophie Pitman, Jenny Boulbouillé, Joel Klein, Donna Bilak, Marc Smith, and Terry Catapano (New York: Making and Knowing Project, 2020), [https://edition640.makingandknowing.org/#/essays/ann\\_054\\_sp\\_17](https://edition640.makingandknowing.org/#/essays/ann_054_sp_17). DOI: <https://www.doi.org/10.7916/pc0c-te91>.

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Image: Faik, Yaltırık and Asuman Efe. "386. LIQUIDAMBAR ORIENTALIS: Hamamelidaceae." *Curtis's Botanical Magazine* 17, no. 2 (2000), <http://www.jstor.org/stable/45065424>.

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## Citation

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# Armenian Bole

## Dublin Core

### Title

Armenian Bole

### Subject

Armenian bole, also known as bolus armeni, is a reddish clay containing iron oxide. It was used in antiquity as medicine, and later as a paint pigment, ground layer for gliding, polishing compound, and food color. Its elasticity and intense red color makes it sought after by painters and goldsmiths.

### Description

At the end of the fourteenth century and start of the fifteenth century, Armenian bole as a recommended base for water gilding was mentioned for the first time by Johannes Archerius and Cennino Cennini. The red color of the gilding base in many fourteenth- and fifteenth-century Italian manuscripts is likely Armenian bole or a similar red earth. The usage of Armenian bole reached its peak between the end of the fourteenth century and the eighteenth century, both in the western tradition as well as the east.

As its name suggests, Armenian bole comes from Armenia and surrounding areas of the Mediterranean. It was imported into Europe particularly for its use in gilding but also for its medicinal use. Increased importation of Armenian bole in the fourteenth and fifteenth centuries has been attributed to a number of reasons. One is the spread of water gilding techniques and their practice throughout Europe. Another explanation is increased demand for its believed healing effects against the plague during the epidemics of the time.

As the mining of similar clays spread throughout regions of Europe in the sixteenth century, the import of Mediterranean boles gradually decreased in the seventeenth and eighteenth centuries. Emanuel Mendes da Costa mentioned that it was “dug in Armenia, but is seldom or never to be found genuine in our shops” in 1757. The term “bole” was confused or interchanged with terms like “red earth” or “red ochre,” and other red clays were sold as or substituted for Armenian bole. As such, the exact composition of Armenian bole used by painters was (and to some degree still is) unclear.

### Source

In Ms. Fr. 640:

Fol. 6r - "For laying down and seating burnished gold and giving red or green or blue"  
...Next take fine boli armeni\* & sanguine, as much of one as of the other, also lamb tallow the size of a bean or a pea depending on the quantity of bole, and a little willow charcoal, or as much as the tallow, & half a walnut shell full of half-burned saffron. Some put in a little candy sugar. Grind all together with water, & apply it without gum or glue, & let it dry, & rub the place that you want to gild with a piece of white cloth to better smooth it, & when the rubbed place is a little shiny, it is a sign that the gold will be carried well...

Fol. 7v - "Against gonorrhea"

Aquæ fabrorum antiquæ lb i., boli Armeniæ in tel tenuissimum pollinem redactæ ȝ.i., mellis communis ȝ.iii. coquantur ad mellis despumationem. Tum refrigerata colentur cum forti expressione & de colatura utatur per injectionem.

[Translation: Old smiths' water, i lb, Armenian bole reduced to the finest powder, i ȝ, common honey, iii ȝ, shall be boiled to clarify the honey. Once cooled, it shall be strained with great pressure & the filtrate shall be used by injection.]

Fol. 12v - "Molding stucco promptly"

Grind & pulverize finely brick or Armenian bole or sanguine & incorporate it with melted wax, & thus melted, cast like the others on a relief medal, & thus you will have a hollow form where you will be able to cast with plaster, pestled paper, or terre chimolée.

## Contributor

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M. Da Costa, *Natural History of Fossils* (Royal Society of London, 1757).

Nicholas Eastaugh, Valentine Walsh, and Tracey Chaplin, *The Pigment Compendium: A Dictionary of Historical Pigments* (Elsevier-Butterworth Heinemann, British Library, 2004).

Image: Anonymous, "Armenian Bole Being Dug from a Clay Pit," woodcut for chapter 26 of *The Tract on Stones in the Hortus Sanitatis*, 1491; Artstor, [https://library-artstor-org.ezproxy.cul.columbia.edu/#/asset/BARTSCH\\_3950036](https://library-artstor-org.ezproxy.cul.columbia.edu/#/asset/BARTSCH_3950036). From Artstor: The Illustrated Bartsch. Vol. 90, commentary, German Book Illustration through 1500: Herbals through 1500; retrospective conversion of The Illustrated Bartsch (Abaris Books).

Elia Zhang, Columbia University

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## Citation

"Armenian Bole," *om+ka*, accessed July 16, 2025, <https://catapanoth.com/omandka/items/show/21>.

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# Mastic

## Dublin Core

### Title

Mastic

### Subject

Mastic is a soft resin from the mastic tree, *Pistacia lentiscus*. The mastic tree is a bushy evergreen which exudes mastic from its bark. The tree has aromatic leaves and fruit. The resin is used as a gum and adhesive and as an ingredient in varnishes. It is also used medicinally, in making chewing gum, and as a flavoring. Mastic has a balsamic odor and an astringent taste.

### Description

The mastic tree is native to the shores of the Mediterranean. Specifically, mastic resin is known to be produced from Chios, an island in the Aegean Archipelago. Throughout history, the resin was highly prized. In 1346, the city of Chios was conquered by the Genoans who later established the stock company of Maona. The Genoan government introduced a new system for the international trade of mastic, splitting the distribution of each year's harvest equally between four regions: 1) the Greek territory, 2) the West (Italy, France, Spain and Germany), 3) Asia Minor, and 4) north and west African (Syria, Egypt and Barbary). In 1566, the Ottomans took over the occupation of Chios from the Genoans and maintained control into the early twentieth century. Under Ottoman rule, Chios continued to be the primary source for mastic trade with Europe.

### Source

In Ms. Fr. 640:

Fol. 3r - "Counterfeit coral"

...For counterfeiting your coral, you can mix a quarter part of mastic into your purified resin to render it more firm and more beautiful, & if you were to take a single tear of mastic, it would be all the better, but it would be too long...

Fol. 3r - "Thick varnish for planks"

...But it is used to heighten colors which have soaked in and to keep them from dust. Mastic varnish does not resist rain, whereas that of oil and rosin does...

Fol. 4r - "Varnish of spike lavender oil"

...You can put in pulverized mastic extracted in tears or otherwise, & it will be more desiccative, in place of sandarac...

Fol. 7r - "Doublets"

Good dragon's blood soaked in eau-de-vie carries its mastic or glue in itself, as do sap green & saffron.

Fol. 31r - "Varnish resistant to water"

Flanders varnish, made with turpentine & oil of turpentine or mastic, can come off and does not hold up in the rain...

Fol. 39v - "Colors for illumination on glass"

In order that your turpentine colors do not spread, & hold together, mix in a little of tear of mastic together with the turpentine.

Fol. 39v - "Tracing some history on glass"

...then you shall fill the background with azur d'esmail or verdigris or fine laque platte tempered with clear turpentine, mixed with a little of tear of mastic if you want that the colors are more even & do not spread...

Fol. 40v - "Cross of the commanders of Malta"

...tempered with clear turpentine & tear of mastic & laid down on a silver leaf, not the kind which the painters use, but a thicker kind...

Fol. 42r - "Wax for seal and imprint"

...You can carve the figures & gild them, silver them, & paint them with colors in varnish, & transfer them onto a base of glass painted with colors in turpentine & mastic. And if you want to apply these plates by incrustation, do it with gum ammoniac tempered with vinegar, and you will have good glue.

Fol. 42v - "White varnish on plaster"

Give two or three coats of quite white glue for painting. Next, varnish with varnish of sandarac, spike lavender oil, and a little mastic. And in the evening put it into a vessel, all pestled well together, without fire, which would turn it yellow. Then with a paintbrush, it is dry immediately. Pour the oil, which will have taken the substance.

Fol. 60v - "Varnish dry in an hour"

Take white turpentine oil & turpentine & mastic, pulverized & passed delicately through a sieve, & boil together, stirring continuously with a stick until it is dry. And put in two liards' worth of good eau-de-vie. And if you extract the tear of mastic, it will be whiter & clearer. There is no need to put in turpentine, but only its white turpentine oil & mastic pulverized at your discretion, until it has enough body. Which one knows when, being placed on a knife in the wind, it does not run. This one is excellent for panels and is dry within an hour and does not stick like the turpentine one.

Fol. 71v - "Varnish"

To a half lb of spike lavender oil, put in 4 3/4 of sandarac & mastic subtly pulverized...

Fol. 74r - "For making varnish"

...And then after, you will take mastic & arabic, two ounces each, which will both be well ground, and you will put everything together, & will make it boil while stirring continuously, for the space of five hours...

Fol. 77v - "Another approved varnish"

Take two ounces of linseed oil & two ounces of petrole oil and two ounces of mastic, the whitest you can find, and of glass alum, & grind it, and take a little bit of white copperas, and put all these drugs together into an earthen pot that should be new, and lay it on hot ashes for a bit, and you will see a beautiful varnish.

Fol. 79v - "For making varnish"

Take some mastic, sang darac, gum arabic & spike lavender oil, as much of one as the other, & make them melt all together, & before coating it, lay a coat of glue quite clear, & let it dry.

Fol. 97v - "Mastic varnish dry in a half hour"

Some take 2 3/4 of mastic, a half 3/4 of turpentine, & a half 3/4 of turpentine oil, & eau-de-vie, a little at your discretion because it evaporates when heated & nonetheless makes the varnish more desiccative. But I made it thus: I take turpentine oil at discretion & put in a good bit of turpentine, because it remains always humid & attaches itself if one puts in too much, & eau-de-vie, & heat in a varnished bowl the said oil, & when it begins to be very hot, I put in some subtly ground mastic & passed through a sieve, around one-third of the oil, and let reheat until it is melted, which will be soon on hot ashes. Once all melted, try it on the knife, and if you see that it has too much body, add in a little turpentine oil, and if it does not have enough, add in mastic, and thus it will be done. And keep it well covered so that no filth gets in. When you want to make it, be careful to sort & choose the mastic that is white & purified of any dirt & dust & black dross. And when you wash it & dry it to render it very white & clean, it will be even better. For if you do not purge it well, these straws & marks, pulverized into it, will remain within the varnish, & when you set it on white or flesh color, it will seem that they are fleas & blemishes. Once well chosen, pulverize it in a mortar and pass it through a very fine sieve, and next mix it in oil, as is said. But if you want to make it more carefully, extract a tear of mastic, as you know, pulverize, pass, & mix, and you will have something very singular for small works. Take heed when varnishing not to breathe on it, for this will make the varnish whiten & take body.

[marginal notes]

It almost dries when working.

One knows that this varnish does not have body enough when it does not take well on a panel in oil, for it is like water. Therefore, add in pulverized mastic & heat until it is good. This varnish is very white & beautiful, & does not go to your head like that of spike lavender. For some, instead of turpentine oil, put spike lavender oil, which is not as good. This varnish is laid down cold on the panel with a very clean fingertip, & one needs to spread it vigorously. The Italians scarcely varnish their paintings because they layer their paintings very thick, & they are a long time drying on the inside, though on top they make a dry skin & crust. One lays the varnish with a finger so as make a lean layer, because when thick, it yellows.

Fol. 98r - "Varnish for lutes"

They take a little turpentine, & oil of turpentine or of spike lavender, & amber pulverized & passed very subtly, & make like that of mastic, & add in a little dragon's blood to color it and make it reddish, and others some terra merita for yellow.

Fol. 99v - "Varnish"

Some make the one of mastic with two ounces of mastic and one of clear & white turpentine oil & eau-de-vie as above. Heat it on ashes until it is melted, then let it rest & put it in another vessel to purge it of dregs.

Fol. 100r - "Gemstones"

You need to pestle your materials in a mortar of thick glass & encased & stuck with mastic into another mortar of wood, in order that it does not break. This can serve for perfumers. & the pestle, also of glass.

Fol. 120v - "Keeping dry flowers in the same state all year"

...Flowers are also kept in their same beauty in distilled vinegar in a well sealed vessel which does not allow any wind, which should be well sealed with wax & mastic. Carnations & roses, the residue of common vinegar makes them rot...

Fol. 133r - "Marks from the points of iron wire which are found on the head of the animal"

...& on this end place there a little hard wax or a little mastic or cement and, by means of the hot iron wire, hold in place the throat of the animal...

## Contributor

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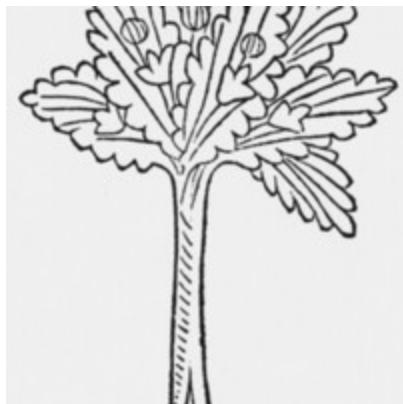
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Image: Anonymous, Johannes von Cuba, and Peter Schöffer, "Mastic," in *Gart der Gesundheit*, published 28 March 1485, Artstor, [https://library-artstor-org.ezproxy.cul.columbia.edu/#/asset/BARTSCH\\_4560083](https://library-artstor-org.ezproxy.cul.columbia.edu/#/asset/BARTSCH_4560083). From Artstor: The Illustrated Bartsch. Vol. 90, commentary, German Book Illustration through 1500: Herbals through 1500; retrospective conversion of The Illustrated Bartsch (Abaris Books).

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# Sandalwood

## Dublin Core

### Title

Sandalwood

### Subject

Sandalwood is a small- to medium-sized tree of the genus *Santabulum* which usually obtains nutrients through photosynthesis as well as by becoming partially parasitic to the roots of other trees. Two common forms are Indian sandalwood, *Santalum album*, and Australian sandalwood, *Santalum spicatum*. Sandalwood's aromatic wood and roots - as well as its essential oil - are commonly used as incense for religious and medicinal purposes. Its wood is also used decoratively. The tree's fruit is edible and does not contain the same strong fragrance as its wood.

### Description

Sandalwood trees are native to East Indonesia, the Pacific Islands, and North Australia. Its distribution also extends to Chile, Hawaiian Archipelago, and New Zealand. Since ancient times, sandalwood oil production was led by India, and its aroma was esteemed by people of Hinduism, Buddhism, and Islam. The ancient Egyptians imported this wood and used it in medicine. It was later known as the East Indian sandalwood in the commercial realm. In the sixteenth century, sandalwood played an important role in the expeditions of Krishnadevaraya, the ruler of Vijayanagara Dynasty, and was brought to the Deccan plateau. Around 1792, the sandalwood trade was monopolized by Tipu Sultan after he declared the tree to be royal. The monopoly was continued by the later Maharajas of Mysore and the Karnataka Government until recently. The sandalwood trade has resulted in severe exploitation and the tree has entered the vulnerable category of the IUCN (International Union for Conservation of Nature) Red List.

### Source

In Ms. Fr. 640:

Fol. 15v - "Tablets"

Some are made from boxwood inlaid with ebony, sandalwood, ivory, or gold and silver like damascening. Then one writes on it with silverpoint, and next erases it with a cuttlefish bone by rubbing them.

### Contributor

Alan Davidson and Tom Jaine, eds., "Sandalwood," *Oxford Reference* (Oxford University Press, 2014), <https://www.oxfordreference.com/view/10.1093/acref/9780192806819.001.0001/acref-9780192806819-e-2129?rskey=j1yQNk&result=2>.

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Image: Francis Sinclair (after I. Sinclair), "Sandalwood (*Santalum album*): flowering and fruiting stem," c. 1887. Chromolithograph. Wellcome Collection, Wellcome Library no. 25343i.  
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*Elia Zhang, Columbia University*

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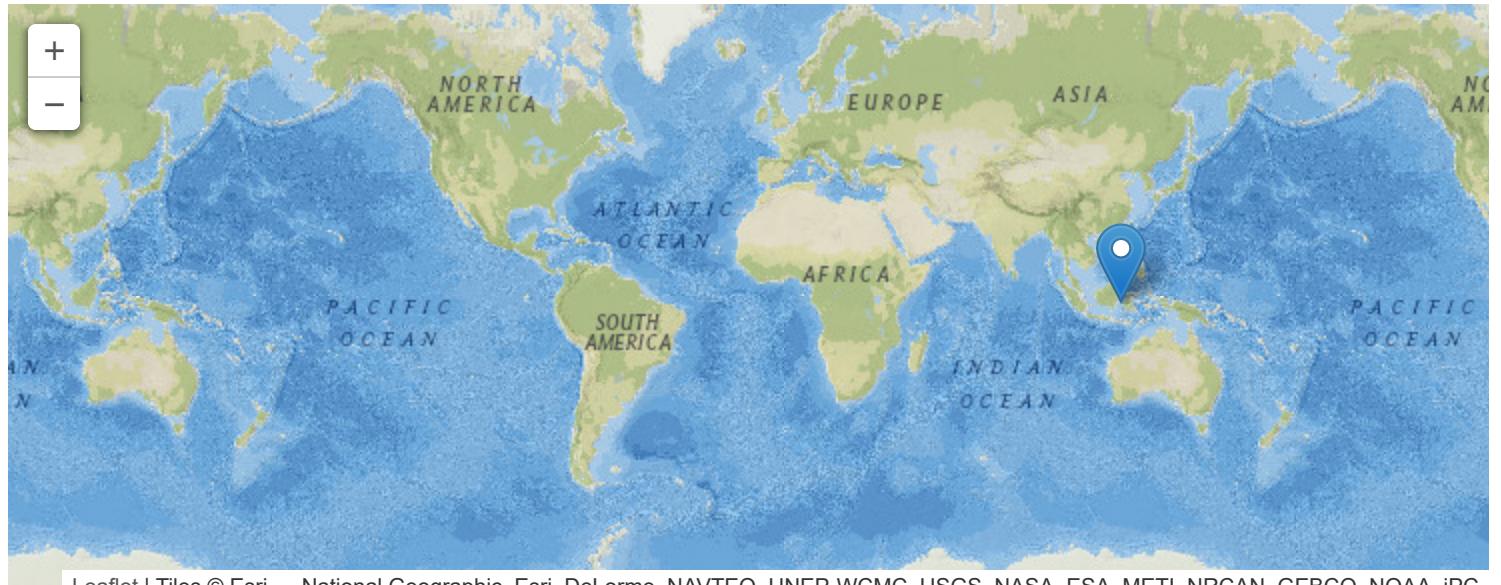
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# Semperviva

## Dublin Core

### Title

Semperviva

### Subject

Semperviva, full name *Sempervivum tectorum*, is the Latin name for plants known as houseleeks, liveforevers, and sengreen, among many other names. It is a succulent and has rosette leaves with fine hairs and pink flowers. It is well-known in folk medicine.

### Description

Semperviva is native to southern Europe. Since ancient Rome, there have been superstitions about the plant's ability to protect houses from lightning strikes. The plant's magical properties also extend to medicinal remedies. For example, English manuscripts of the fourteenth century record it as a cure for burning hands, paralleling its believed defense against lightning. In the nineteenth and twentieth centuries, semperviva was seen as a good luck plant for the house.

### Source

In Ms. Fr. 640:

Fol. 55r - "Against wounds"

Cut a chicken or a dog to test & in the wound put sap & pestled herb which is called semperviva, that is the small one which has leaves like small grains, which some call vermicularis. And one holds for certain that it will not die.

### Contributor

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Image: Hans Simon Holtzbecker, Maria Sibylla Merian, and Tidligere tilskrevet, "Sempervivum tectorum (almindelig husløg); Sempervivum montanum (bjerg-husløg)," 1649-1659, Artstor, <https://library.artstor.org/#/asset/28354365>.

Elia Zhang, Columbia University

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