

VETIVER: PERFUMERS' LIQUID GOLD

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Introduction

For the last 3 000 years essential oils have been used, known and studied. These natural products were originally used in religious rituals and for medicinal purposes in China, Iran, Egypt and India. Historically, the first essential oil produced for perfumery was rose oil, and there are references to the production of essential oils going back to the late 13th century. Arnold de Villanova apparently steam-distilled rosemary and sage leaves, but no one really knows if he actually separated the oil produced from the water phase, to produce an essential oil as we know today.

An essential oil or volatile oil is generally a volatile mixture of organic compounds derived from a single botanical source. These oils, compounds sometimes composed of hundreds of aroma chemicals (chemicals with aromas), are primarily responsible for the characteristic smell of the natural plant source. Most essential oils exist as they are extracted in the source material, but certain oils are formed only as a result of an enzymatic reaction once the plant tissues have been crushed or specially treated. Essential oils are located throughout the plant tissue or in special sacs, cells, glands or ducts found in several parts of plants such as flowers, leaves, bark, stems, seeds and roots.

For example, rose oil from the petals of the rose flower, geranium oil from the leaves, or today's example, vetiver oil from the roots of a perennial grass grown in Reunion, Haiti, Angola, Guatemala, China, Java, Brazil and now the north of Thailand. The respective oils are preferred to the natural plant as they are more stable and less bulky and many times stronger than the odour from the unprocessed plant material. Individual plant odours vary widely according to climate, soil, altitude and all the elements of nature and a certain uniformity of odour can be obtained when essential oil is used. This lends them more favorably to modern product processing requirements. We live in a McDonald era where branded products must have the same smell and taste irrespective of their country of origin. Of course, these natural elements lead to essential oils from different countries having quite specific characteristics that identify their source.

Essential oils are so called because they were thought to be essential to the life processes of the plant. There are approximately 400 essential oils used in the perfumery and flavor industry today.

Current Production Methods

Three production methods to obtain essential oils predominate today: extraction, expression, and steam distillation.

The products of extraction lead to a series of products known as concretes and absolutes, which are not regarded as essential oils in the true sense since the term is properly reserved for distilled or expressed oils. Extraction uses volatile solvents such as hexane and alcohol to wash out the aroma components from the plant material. The process also captures relatively non-volatile materials, including waxes and colour. The process, which is relatively expensive, is preferred for plants whose odour may be destroyed by the heat of distillation such as jasmin and other flowers.

Expression is the method primarily used for squeezing the essential oils from the peels of citrus fruit from the small translucent sacs.

The prime method is distillation, which embraces two variations on the basic process.

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1. Water distillation used by covering the prepared plant material with water occurs when the diced botanical is completely covered with water and then heated with agitation to the boil; normal condensation then takes place.
2. Water and steam distillation is specifically used for freshly cut green plant material placed on steel grids over a layer of water in the base of the still. The water is boiled via a steam coil and jacket. The steam produced in the boiling vessel remains saturated and at low pressure.
3. Direct steam distillation is by far the most widely practised system and is the system used by Thai-China Flavours and Fragrances Co. Ltd for the production of vetiver oil. The cut and chopped dried vetiver roots are packed on well-spaced supporting grids in sealed cylindrical tanks or “stills”.

Live steam is injected through perforated coils in the base of the “still” at above atmospheric pressures. For vetiver the steam is injected at 3 bar. The pressure ensures total oil cell rupture and thereby releases the maximum volatile oil components. This is especially important for an oil like vetiver which is rich in C15 sesqui-terpenoids (vetivene, vetiverol) with boiling points in the 200 + °C range. The super-heated steam forces the oil from the roots and carries the volatile oil in a vapourous state from the top of the still to a water-cooled condenser. In the condenser the steam is cooled and droplets of water and oil form on the sides. From here, they drip out into a separating tank, affectionately known as a “Florentine flask”. The oil being insoluble in the water floats to the top and can be drawn off.

Vetiver

Vetiveria zizanioides is a type of spiky fibrous grass with 2 m or more long rhizome-like roots. The dried roots after washing and drying can be distilled immediately or are stored for 12-24 months so enzymatic processes can increase oil yield. The steam distillation produces about 0.3-1.0 percent of oil. During distillation, as with most oils, vetiver picks up some reaction products from the heat process on the cellular matter. These “still notes” present themselves as green sulphuraceous odours that disperse after a month or so of standing.

Vetiver Oil

Vetiver oil is a viscous light-brown oil. It has a rich green-woody earthy and nut like fragrance. Poorer grades produced in China and Java by local farmers with primitive equipment are frequently darker in colour and have smoky backnotes.

It is a highly prized oil and finds extensive use in fine perfumery for its richness and depth.

Vetiver is also used for the separation of its main alcohol – vetiverol – for an even cleaner note. Vetiverol may subsequently be acetylated for the production of vetiveryl acetate, which with its slightly stronger silky, fruity, green-woody nuances is irreplaceable in the bottom notes of ‘Haute couture’ fragrances.

Here are just a few examples of fragrances whose distinctive notes would not be possible without vetiver and its children: Guerlain’s *V•tiver* – Chanel’s *Coco* – Christian Dior’s *Miss Dior* – Yves St. Laurent’s *Opium* – Givenchy’s *Ysatis*.

TCFF’s Thai vetiver oil

Thai vetiver is a light golden-brown viscous oil and falls into the finest grades of vetiver with high vetiverol content and little or no smokiness. It truly is Thai ‘Liquid Gold’.

Preparation	Vetiver roots dried and chopped
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Loading	Roots loaded into the still on grids
Distillation	Steam distilled for 18-24 hours @ 3 bar
Condensation	Steam and oil mixture cooled
Separation	Oil separated from distillation water
Maturation	1 month for “still note” to disperse

Name Suggestions for Vetiver Perfumes

Haute couture names: Royal Vetiver, Vétiver de Siam, Vétiver Femme, Vétiver pour Homme

Premium market names: Vétiver de Thaïlande, Thai Gold, Golden Grass, Liquid Gold

Popular Names with Mass-Market Appeal (with Double Meaning)

Thai Grass

King's Ransom

Ffad