

Geranium - Pelargonium ???

Thursday, April 07, 2011

Last weekend I attended a workshop with Robert Tisserand, hosted by the BCAPA. During the two day workshop Robert had us complete a number of Aromatherapy Trivia Quizzes. The question that my mind keeps going back to is the one about which Pelargonium plant geranium essential oil comes from. According to Robert, the answer I chose *Pelargonium graveolens* is incorrect, with the correct answer being *Pelargonium x asperum* (a hybrid of *P. radensand P. capitatum*). My understanding of what he said was that all, or most of, the Geranium oil on the market is now produced from *Pelargonium x asperum* and not *Pelargonium graveolens*. I have great respect for Robert and his incredible body of knowledge, but I keep asking myself when did that change? How come I haven't come across this before?

Of course I am neither a farmer growing a crop for distillation, nor am I a distiller, or for that matter a wholesaler of essential oils, so working with specific varieties to produce or sell essential oils is not part of my day to day activities. However, I do teach aromatherapy courses and therefore making sure that I am accurate with the Latin Binominal is important to me.

As I am not in the business of selling essential oils myself, the amount of oil I use personally and in my practice is rather small so I rely on my essential oil suppliers. These are people with whom I have worked with over many years and have come to trust their integrity. So my first port of call was to check what they say that they are selling. What I found was that most of them are selling what they call *Pelargonium graveolens*. One was just selling *Pelargonium roseum*, while a few were selling both *P. graveolens* and *P. roseum*. Another supplier was offering three different geraniums *P. graveolens*, *P. roseum* and *P. graveolens roseum x asperum*. One supplier was just selling *P. graveolens roseum x asperum*. Those suppliers selling *Pelargonium roseum* show the country of origin for this oil as Madagascar. The suppliers selling *Pelargonium graveolens* have a number of different countries of origin including Reunion, Egypt, China and South Africa. The two suppliers selling *Pelargonium graveolens roseum x asperum* both have the country of origin for this oil as South Africa.

According to the Prota database the correct name for this oil should be *Pelargonium Rosat* Group:

Geranium oil freshly steam-distilled from the herbage of *Pelargonium Rosat* Group is a pale green, mobile liquid with an unpleasant top note partly due to the presence of dimethyl-sulphide. This note disappears on proper aeration or ageing of the oil. When the oil ages, the green colour fades, the oil becomes more yellow and its odour acquires a green leafy-rosy body with minty notes and a sweet-rosy herbaceous dry-out lasting about 5 days. The fragrance compounds are stable under slightly alkaline conditions, e.g. in soap. Geranium oil is only occasionally used as a flavouring material because of its bitter taste.

The main chemical components of geranium oil from Réunion are: geraniol, citronellol,

isomenthone, geranyl formate, citronellyl formate, linalool, guaia-6,9-diene and cis-roseoxide. Although the proportions of the compounds may vary and oils from different origins can be distinguished by their odour, geranium oils are quite uniform in composition. Many *Pelargonium* species contain essential oil but none of the wild species are directly involved in commercial oil production. Three wild species are indirectly involved in the development of commercial essential-oil cultivars, mainly by hybridization and subsequent vegetative propagation:

– ***Pelargonium capitatum*** (L.) L'Hér.: $2n = 66$ (hexaploid). Decumbent, much-branched, rose-scented subshrub up to 1 m tall, with crisped, villous, 3–5-lobed or -partite leaf blades, flowers pale pink to pink-purple in a 8–20-flowered head-like pseudo-umbel and with pedicel much shorter than the hypanthium. It grows wild along most of the south coast of South Africa on sandy dunes or flats.

– ***Pelargonium graveolens*** L'Hér.: $2n = 88$ (octoploid). Synonym: *Pelargonium asperum* Ehrh. ex Willd. Erect, much-branched, strongly rose-scented shrub, up to 1.3 m tall, with palmatipartite to pinnatisect leaf blades soft to the touch (villous) and with irregularly pinnatipartite to pinnatisect segments, flowers white to pinkish-purple in a 3–7-flowered

pseudo-umbel, pedicel usually shorter than hypanthium. It grows wild in mountainous areas in southern Africa, and is recorded from Zimbabwe, Mozambique and South Africa (northern Transvaal and south-eastern Cape Province).

– ***Pelargonium radens*** H.E.Moore: $2n = 88$ (octoploid). Synonym: *Pelargonium radula* (Cav.) L'Hér. An erect, much-branched, rose-scented shrub, up to 1.5 m tall, with palmatisect to pinnatisect leaf blades with narrow, pinnatisect, scabrous segments, flowers pinkish-purple in a 3–8-flowered pseudo-umbel and pedicel as long as hypanthium. It grows wild in coastal regions of the southern Cape Province of South Africa, often in mountainous, rather moist habitats.

Pelargonium Rosat Group consists of those cultivars yielding commercial rose-scented geranium oil. This group originates from the cultivars that have long been grown in Grasse (France) and which have been distributed from there to all major production areas. It is not clear, however, to what extent later independent introductions have contributed to the complex of hybrids. The typical and commercially most important cultivar in Réunion is 'Rosé', a hybrid between *Pelargonium capitatum* and *Pelargonium radens*. Other cultivars may be hybrids of *Pelargonium capitatum* and *Pelargonium graveolens*. Most of these cultivars have 77 chromosomes, and their morphology and essential oil yield are also in between their natural parents. However, the oil composition depends on the *Pelargonium capitatum* parent, which transmits the ability to synthesize geraniol and citronellol rather than isomenthone. Furthermore, the presence of guaia-6,9diene is also inherited from *Pelargonium capitatum*. Réunion type cultivars are typical of *Pelargonium Rosat Group*. Future research should more clearly demarcate the cultivargroup. Before the Réunion Rosat Group cultivars were proven to be hybrids of *Pelargonium capitatum* and *Pelargonium radens*, the pelargoniums grown for their essential oil were often called *Pelargonium graveolens*, *Pelargonium roseum* or *Pelargonium asperum* in the botanical literature, with scant regard for botanical accuracy. The name *Pelargonium roseum* has been applied by various authors to 3

different hybrid combinations (one of which possibly includes Rosat Group cultivars but is not the oldest one and should be rejected). *Pelargonium* × *asperum* was proposed by H.E. Moore as the correct name for the hybrid of *Pelargonium graveolens* and *Pelargonium radens*. As *Pelargonium graveolens* is not involved in the origin of typical Rosat Group cultivars, *Pelargonium graveolens* and *Pelargonium* × *asperum* are not acceptable as correct names. Moreover, a cultivar classification is more appropriate for cultivated plants; hence *Pelargonium Rosat Group* is preferred.

The *Essential Oils, Volume IV* written by **Ernest Guenther** in 1950, reprinted in 1972 although an older book is full information, and this is what he says about Geranium:

The taxonomy of the plants which are cultivated in various parts of the world for the production of commercial geranium oil has been a matter of much controversy and has given rise to considerable confusion. In fact, the name geranium oil itself is a misnomer, since the commercial types of geranium oil are derived not from any Geranium, but from several species, varieties and strains of *Pelargonium*. *P. graveolens*, *P. roseum*, *P. radula*, *P. capitatum*, *P. odoratissimum*, *P. fragrans*, and *P. terebinthinaceum* have all been stated as the source of geranium oil. According to Beckley, it is questionable whether some of these terms are not fancy horticultural names, with no real botanical meaning. Neither the true *P. odoratissimum* nor *P. fragrans* is suitable for cultivation for the purpose of oil production. The former consists of a mass of radical leaves with a few long, trailing, flowering branches, possessing a most unattractive odor. *P. fratrans* is a small, bushy shrub of pleasant odor, but the odor differs from that of geranium oil. The term *P. roseum* is most probably a garden name for *P. graveolens* and *P. radula* types. The *Pelargonium* plants readily cross, and soon after their introduction into Europe so many hybrids were developed that today the numerous existing varieties and strains can hardly be distinguished from one another. "Geranium" has now become a rather vague horticultural term which has no relation to the botanical term Geranium. The only region in which *Pelargonium* grows wild is in the Cape Province of South Africa. The parent part of all *Pelargonium* varieties and strains used today for the commercial production of geranium oil seems to be *P. graveolens* Ait. This might explain why the Latin Binominal chosen by most writers of Aromatherapy Books has been *Pelargonium graveolens*.

In his book, *Essential Oil Crops*, **E. A. Weiss** does have a comparison of the chemical composition of geranium oils from selected origin (Algeria, China, Egypt, Morocco and Reunion) but I have not been able to find any comparison of the chemical composition of geranium oils obtained from different species.

In the *Encyclopedia of Common Natural Ingredients used in Food, Drugs and Cosmetics* (2nd Edition) **Leung and Foster** list Geranium as:

Geranium oil, Rose -Source: *Pelargonium graveolens* (L.) L'Her. ex Ait. (Family Geraniaceae).

Synonyms: Algerian geranium oil, Bourbon geranium oil, and Moroccan geranium oil. There are several types of geranium oils produced from cultivated forms, varieties, and hybrids of *P. graveolens*, and Pelargonium species such as *P. odoratissimum* Ait., *P. capitatum* Ait., *P. crispum* (L.) L'Her., and *P. radula* (Cav.) L'Her. ex Ait. (syn. *P. roseum* Willd.). The more commonly used ones are Algerian or African geranium oil, Reunion or Bourbon geranium oil, and Moroccan geranium oil. Despite mention of several commercial source species in the literature, *P. graveolens* appears to be the only one commercially cultivated (**TUCKER AND LAWRENCE**).

And so the confusion continues. I'm off to sniff Geranium, no matter what its Latin Binominal is, it is a wonderful oil and certainly one I want to have in my Aromatherapy Kit!!