

The history of lavender oil: Disturbing inferences for the future of essential oils

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In Greek tragedy the hero is often depicted as elevating himself to the point where he challenges the gods, who then destroy him. By learning from nature, the fine chemicals industry has made great advances, which are helpful to the perfumer. But the belief that whatever nature can do, science can now do better, is a dangerous illusion. The consequences of the illusion may already be showing in the perfumery industry's balance sheets.

As any perfumer could tell his or her policy-making superiors, our first lesson from nature is that she never makes a well-rounded and attractive perfume without backing up the main components with a small quantity of mixed trace constituents. Sometimes these traces are the most important part of the formula. The difference between Otto of Rose and the simple mixture of citronellol and geraniol that comprises most of the oil is quite obvious. It is arguable that users of the otto are paying over thirty thousand dollars per kilo for the trace components, and are getting value for money.

Until World War II, true lavender oil was one of perfumery's most important raw materials because it enabled the perfumer to achieve this trace component effect in virtually all bouquets at very low cost. Being a mixture of some seventy different minor components blended in a carrier of linalyl acetate, this oil will blend with almost any formula. If the oil is pure, at full strength and free of camphor, proportions as low as 1% of the formula will refine cruder natural products or give lift and interest to mixtures of synthetic aromatics. In one instance the pure oil was diluted to one part in eighty thousand of an otherwise unperfumed spray and the purchaser said the lavender odour was too strong. The concentration was then halved, to the user's satisfaction. The potential of this oil was better understood in Europe than elsewhere, and eminent perfumers there held that no medium-priced formula should be without a trace of lavender.

If this oil has such immensely valuable properties, which were once common knowledge and universally applied, why has it sunk to its present state of commercial insignificance? This sad state is due to that most disastrous combination of human frailties: greed

and ignorance.

Since the species *Lavandula angustifolia* (synonym *L. officinalis*) can be propagated by seed, two lavender siblings are no more likely to be identical than are their human counterparts. In fact, the species gives rise to thousands of different genotypes. Most of those which produce good oils return very low yields, compared to most other labiatae. While production costs are therefore higher than for other members of the family, and output potential not unlimited, both its economy and availability to the users could have been entirely satisfactory if it had been correctly used.

Between the wars, rapid expansion of the market for perfumed toilet preparations combined with the effects of the depression. This led to demands for increasing supplies of this universally applied oil at ever lower prices. Inevitably, a few suppliers met these unrealistic demands by diluting the oil, and thus set a level of price competition which others were reluctantly obliged to follow. The price for the diluted oils soon became the market norm for anything sold as lavender, even the pure oil. The buyers aided this adulteration by appraising the material only against physical and chemical criteria, which were easily matched by the sophisticator.

Initially, the extent of the adulteration was slight and due to the lavender's covering power, impossible for experts to discern from examination of the oil. But the diluted material performed less well in formulas, and more of it had to be used to give the required trace component effect. The buyers reacted by demanding proportionately lower prices, so the suppliers were driven to introduce more diluent by steps small enough to be explained away as slight seasonal differences in quality. It did not take long for this process of action and reaction to bring the commercial product to the point where it no longer resembled the original oil.

A recent attempt to reverse the process demonstrated the extent of this departure. A modern commercial lavender oil is a component in a certain formula. One part of a good natural oil was mixed with ninety-nine parts of the commercial material and the

mixture tested in the formula. The difference was so striking that even if it was an improvement, the perfumer dared not offer the new blend to his client for fear of upsetting a well-established status quo. Conversely, the addition of 1% of a commercial oil to 99% of the natural material had no effect that the writer could discern.

This unfortunate degradation has been further assisted, especially in America, by the misconception that true lavender oil is the basis of normal lavender perfumes. Except for the most floral presentations of the bouquet, this is just not so. The traditional English garden lavenders to which the public is accustomed come from the high-yielding camphoraceous hybrids of the *L. angustifolia* × *L. latifolia* cross now exploited commercially as "lavandin." This oil is, therefore, the base of ordinary lavender perfumes. It is far less costly to produce than lavender and although rather crude on its own, its odour is most acceptable when modified with a small proportion of true lavender.

It follows that although many methods of diluting the lavender oil were tried, by far the most successful involved the admixture of the lower priced hybrid oil after it had been acetylated to raise its ester content. While the hybrid oil was of the old less camphoraceous 23% type and not much above 33% of the mixture, the lavender's covering power concealed the diluent. When the hybrid content was increased, the mixture presented lavender as the ready-for-use perfume oil that the less well-informed buyers were expecting.

By 1927 America alone was importing more "lavender oil" than the whole of France produced. Smart buyers were congratulating themselves on acquiring their lavender oil below production cost. But in real-

ity, the prices they paid for the mixtures were far higher than the cost of buying the two oils separately at a fair price and making their own blend.

The writer's family have been directly involved with lavender since 1911. Long before clever adulteration became the norm, his father was one of the leaders advocating the appraisal of the oil by its ester content. This was not because any real value was placed on the rather feeble odour of pure linalyl acetate, but rather because it might indicate the extent to which the lower-ester hybrid flowers had been excluded from the still. Even in 1913 it was realised that quite a small content of hybrid oil diminished the lavender's ability to refine the cruder elements or lift the synthetic aromatics in a formula. But the reasons were not then understood and could not be stated in convincing terms.

It is now known that the components that give true lavender its remarkable lifting and modifying power are largely absent from the hybrid oils. For example, the ketones in lavender belong to the valuable amyl group. In all other *lavandula* species they take the form of camphor. It is now seen that mixtures containing up to 66% of hybrid oil had the valuable constituents of lavender at less than half their natural strength. It is not surprising that they failed in the applications where the pure oil had been used successfully for more than fifty years. Major users were forced to abandon these applications and reformulate their perfumes. Now, apart from being a minor component of lavender perfumes, lavender oil has largely fallen into disuse. Only a few practising perfumers can still recognise the natural material and even fewer know of its potential in the pure state.

Two items involving well known compounding companies show the depth of the abyss into which

The Denny family had a major interest in the largest soap manufacturing in London in the early 20th century. This meant that they were also a major buyer of essential oils, particularly lavender, for the company's soap and toilet preparations. Young C. K. Denny was manager of the factory and became personally involved in the perfumery department.

The family sold their interest in the business to the Lever group in 1921. C. K. Denny, who had never liked city life, left on an enterprise of growing lavender in Tasmania. He collected seeds from France and, with his family, settled at north Lilydale, near the northern coast of Tasmania, and called his property Bridestown after a remote west country village from which his wife had come. The seeds were sown in 1922 and the oil proved to be of excellent quality.

The struggle of establishing the farm continued, with a distillery built in 1930 and a total plantation of 50 acres by 1939. After several years of neglect, new property nearby at Nabowla was bought and cleared and the first lavender planted in 1948. The plant selection program began and for 17 years all the genotypes that came from the original plants were propagated by cuttings and their oil evaluated.

A further 9 years were spent in preparing a blend of genotypes that produced the finest in genuine lavender effect, and which provided an excellent yield of oil per acre. At the same time, specialized machinery was developed to provide a highly productive gathering and distillation process.

At the present time, the Bridestown Estate is probably the world's largest producer of a pure genuine lavender oil, and is probably the only one that does not require "standardization" to be sold competitively and with a reproducible order from year to year.

lavender has fallen. One company offers a "reinforcer" for modern lavender oil, which appears to consist mostly of amyl ketone, while another company's chemist rejects a particularly fine natural oil on the grounds of high ketone content! Where does the producer go from here? Its flowers no longer yield the standard product!

Certainly, if the case history of lavender is any guide, the outlook for the producer of pure essential oils is far from reassuring. Admittedly, lavender oil was so universally important and in such demand fifty years ago that it was an obvious early target for clever sophistication. Its present condition is the advanced state of a disease that it contracted earlier than most of its contemporaries. But one wonders just how many other oils are already on a similar downward path, because, as it has been shown, it is impossible to detect the first small step in adulteration and the subsequent insidious increments are just as imperceptible from one year to the next. It may well be that this "virus" which "killed" lavender oil is more prevalent than is commonly supposed. Even where its onset is detected, the present unhappy story shows that its effect is still likely to be terminal.

Obviously, those who could see no satisfactory alternative to lavender oil and used large quantities of it in the 1920s viewed the onset of adulteration with alarm. They advocated the establishment of alternative sources of supply as an urgent need and they gave verbal encouragement to such enterprises in every corner of the globe. At that time no one knew the difficulties of such an undertaking, nor could they foresee that, by the time it had matured, the users would have been obliged to abandon the natural product.

Now it appears that the useful lavandin oil has caught the diluent disease. Once again the users are seeking to encourage new sources of supply. But this time the probable difficulties in such a project are well known, and no sane person any longer believes that this is just a simple matter of putting plants in the ground and harvesting the flowers next year. For example, it is unlikely that the lavandin hybrids involve fewer than 50,000 viable genotypes, of which only about 0.1% will yield commercial quantities of the oil that is accepted as standard quality today. Similarly, although the sterile nature of the hybrid facilitates botanical controls, it complicates the problems of maintaining a viable planting stock without either moving the farm or changing the quality of the oil.

It follows that those who could undertake new projects of this kind are apprehensive that before any new source of an oil could achieve maturity the present users will have lost interest in the natural oil. They will have had to standardise on the commercial grades in order to be able to carry on in the meantime. Without firm support from the users it would be hazardous to embark on the establishment of a new source of some essential oil, especially if it is already the subject of clever adulteration.

No one doubts the superior convenience to manufacturers of the modern synthetic aromatics, nor can fail to understand the attraction this must be to policy makers in the boardroom. But the unfortunate effects of synthetic chemicals in other fields have made the public apprehensive of using compounds that do not obviously exist in nature. This must account, at least in part, for the present "unperfumed hypo-allergenic" syndrome. This may soon lead to nicely-packaged water being sold as the ultimate in cleansers, but any of those supremely beautiful Balinese women with their perfect skins will tell you that it isn't.

On the other hand, the products of familiar flowers and herbs are not suspect in the public mind. In fact, rather the reverse, and the inclusions of such perfumes may be thought to enhance the properties of toilet preparations. In any event, the failure to support synthetic formulations with the mixed trace component effect of natural products must frequently lead to perfumes that are acceptable at first, but which become monotonous and boring with continued use.

The uninformed outsider must doubt the economics of frequent costly promotions that can only aim at large volumes of first sales for lines which, let's face it, do not stand out all that much from their competitors. Unless the perfumery industry differs from most others, the best results come from repeat orders generated by consumer satisfaction. Although promotion and presentation must be paramount in creating the initial sales, one suspects that the role of the perfume in attracting or repelling potential devotees is often under-estimated in the boardroom.

It is a byword in the industry that all cost savings start with the perfume formula. If the apparent economy is based on using adulterated natural products because the unit price is low, the supplier's profits will be increased by the concealed addition to the user's costs. If the proposed saving involves elimination of the natural products from the formula, repeat orders may be disappointing because a monotonous and obviously chemical odour is now going to be worse than none at all.

Whether the user industries will think it worth supporting the production of pure essentials oils, this writer can not tell. Where new sources are concerned it will involve taking up the limited output of the early years while the project grows. But if every user leaves this for someone else to do, it is not difficult to predict the degradation and disappearance of oils that are as good and plentiful today as true lavender was fifty years ago.

One inalienable truth shines through this murky story. In this world we get only what we pay for. The great P. T. Barnum said of those who think they are smart enough to beat this axiom, "There is one born every minute."