

# Reflections of a Retired Flavorist Before He Forgets:

## Mint

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In my earlier article on strawberry,<sup>1</sup> I mentioned the long-range effect a talk by Dr. Keene Dimick had on future strawberry flavor formulations. At the time of that talk, the Society of Flavor Chemists was a much smaller body and met at the Sheraton Russell Hotel on Park Avenue in New York City.

At about the same time, another talk had a more immediate impact. It was said that the lights burned through the night at a number of flavor houses after the talk on mint oils by a representative of I.P. Callison, the far west mint oil producer. If I recall correctly, the speaker was Paul Tornow. He discussed various oils and showed how GC curves could be used to differentiate between oils and to spot the addition of one to the other. Literally, the midnight oil may not have burned through the night of the talk, but there is little doubt that some purveyors of Oil Peppermint did some rapid reformulation as a result of that presentation.

There are two types of Peppermint Oils of commerce. The first, *Mentha piperita*, is the type grown in the US. It travelled from England to New York state, then to the midwest and then on to the Washington-Oregon area. More recently the move has been back toward the east to areas of Idaho. As the soil becomes contaminated with the fungus that wilts the plant, new areas of production must be found. Depending on area and climatic conditions, the major difference in oils from various regions is in the menthofuran content. Menthofuran has an oil refinery—coconut lactone-like odor which, at the 2-3% level in peppermint oil, adds a desired fullness of flavor that is particularly pleasant in confections. Oils from the Yakima Valley, where temperatures are higher and flowering is more prevalent, tend to have a much higher and objectionable menthofuran level. Menthofuran is quite high in the flower of the plant.

The second group of peppermint oils, *Mentha arvensis*, is

primarily produced in Brazil, China and Formosa. They have a menthol content above 70%, compared to the approximate 50% level for the *Mentha piperita*. *Mentha arvensis* is the source of natural menthol obtained by chilling and centrifuging out menthol crystals. The liquid residue with a menthol content, usually 45-50%, is the article of commerce, it is called Dementholized Peppermint Oil or Dementholized *Mentha arvensis*. Its menthone content also approximates that of *Mentha piperita*. This oil is less expensive than the American oil and less desirable flavorwise. Although it contains components not present in *Mentha piperita* which can serve as distinguishing markers on GC curves, the lack of a number of trace compounds, including menthofuran, is the principal reason for its less desirable flavor.

In Europe it has been common practice to blend *Mentha arvensis* with *Mentha piperita*. By choosing a Yakima oil with a high menthofuran content, a desired menthofuran content can be obtained with a blend using only 15-25% of Yakima oil. The addition of *Mentha arvensis* oil to *Mentha piperita* oil is considered an adulteration in the US, when the blend is labelled Oil Peppermint.

American peppermint oils are usually distilled in the field, but are seldom sold as such. The native oil contains some trace materials at objectionable levels and therefore the oils are rectified. Rectification involves redistillation in a fractionating column and the removal of a portion of the lights (2-5%), as well as a small percentage of the tails or residues. I have examined the lights from several rectifiers that varied in the sharpness of their cut. Flavorwise I preferred oils where 3% lights were removed, representing a broader slice across the front of the oil. Too fine a fractionation apparently removes desirable components.

One of my first projects back in the late 1950s, on my first simple GC, was a study of American peppermint oil lights. They proved quite complex and I found methyl sulfide, the lower aliphatic alcohols and aldehydes, many ethyl esters and higher esters, the hexenyl compounds and eucalyptol (1,8-cineole), together with an array of terpenes.

*Arvensis* oils are deficient in eucalyptol. From the viewpoint of a flavorist, blending a high menthofuran native *Mentha piperita* oil with a clean *Mentha arvensis* oil to a menthofuran content of 2-3%, so as to obtain a less expen-

sive mint flavor, is a logical first step. Raising the eucalyptol and the menthol content is the logical second step. Eucalyptus oils or eucalyptol from that oil and natural menthol would be the materials of choice. One should also consider the addition of small amounts of "American Peppermint terpenes," which are the lights distilled from peppermint oil during rectification, if the native oil does not supply sufficient top note. Other additives would be the prerogative of the individual flavorist and the needs of the project.

With the emphasis on natural flavors today, such a combination could not be considered an Oil Peppermint, but it certainly could be labelled as a natural flavor. Unlike some of today's products containing "natural" components, all ingredients in this natural mint flavor are either naturally distilled essential oils or components isolated by physical methods.

After saying all of the above, if cost permitted, for

optimum peppermint flavor I would prefer a straight midwestern or Willamette Valley *Mentha piperita* oil with 3% off the top in a broad sweep and 2% of the tails removed.

It was my original intent to inform the younger members of our industry about some of its historical background, using four flavors and hence four articles as the vehicle. Their publication, letters received and various conversations resulted in additional three. I know I can't remember number eight.

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### Reference

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1. JJ Broderick, Reflections of a retired flavorist before he forgets: Strawberry. *Perf & Flav* 17(3) 33-34

