

## Reflections of a Retired Flavorist Before He Forgets:

# Lime

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The flavor of Oil Limes, Distilled certainly ranks near the top of my list of flavors that I would choose in a confection. I feel that it has a clean, bright flavor and that may be one reason for the popularity of Cola and Up-type beverages where it is a key ingredient.

Surprisingly, Oil Limes, Distilled, is not a true natural product but results from the action of the acidic juice on the original essential oil. It is produced by comminuting the whole lime and distilling off the altered essential oil.

Back in the 1960s I compared the composition of Oil Limes, Distilled with Oil Limes, Expressed using a GC. I was curious about the differences and the changes that obviously took place in the distilled oil. I was struck with the similarities between Oil Limes, Expressed and Oil Lemon. One obvious exception was the presence in both lime oils of an ingredient (I identified it as a terpene alcohol) that I felt was a key characterizing component of lime and had a fresh pine-terpineol odor. Its presence in both oils indicated that it was present initially and unaffected by the action of the juice.

The comparison of the GC curves showed a loss of  $\beta$ -pinene and citral from the expressed oil and the appearance of oxidation products in the distilled oil. To better understand the changes, phosphoric acid was added to  $\beta$ -pinene, refluxed and distilled. Many of the components developed in the distilled lime oil resulted from this reaction. Because of the similarities between expressed lemon and lime oils, I next added the phosphoric acid to washed lemon oil and came even closer to the composition and flavor of Oil Limes, Distilled. The key terpene alcohol was not present, however, resulting in an incomplete flavor of distilled lime oil.

I recall discussing this key alcohol with Jim Rogers, then with Fritzsche Brothers. He felt I was probably looking for  $\alpha$ -fenchyl alcohol. Although it had recently appeared on the FEMA-GRAS list, it was not part of the flavorist's organ of raw materials. At that point in time the flavorists were eagerly seeking newly GRASed materials and Dick Pisano, of Citrus & Allied, was enthusiastically pursuing sources of these sought-for ingredients. Dick was approached and he ferreted out the  $\alpha$ -fenchyl alcohol for me and this proved to be the ingredient that I had sought.

I am sorry I never had the opportunity to check the  $\alpha$ -fenchyl alcohol content of Florida's Persian Lime Oil. I would have enjoyed studying the end product produced by treating that oil with phosphoric acid, refluxing, and distilling. I leave such experiments to some curious younger flavorist.

### Reference

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