

A Critical Revision of basic Methodologies for Solving Complex Flavor Systems

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Flavor analytical chemistry has as major goal to be able to understand the chemical bases of the sensory perceptions elicited by a product. For achieving it, this branch of science follows a series of consecutive tasks based sometimes more on experience than on the genuine understanding of the chemical bases of the sensory perception, of the physical chemistry laws related to the isolation and preconcentration of chemicals and of the rules for reliable chemical measurement. Such way of proceeding may imply the consumption of more resources than those genuinely needed for reaching the goal, or worse, the failure in reaching it. This presentation will revisit some of the practices most often reported paying special attention to the more controversial ones.

Maybe the most critical decision is about the type of extract used for beginning the sensory screening process. It will be shown that the most frequently used strategies are extremely ineffective as the extracts are not really representative of the headspaces that the sample can produce. The inevitably biased olfactometric results obtained will have to be further corrected in complicated, effortful, expensive and error-prone steps of determination of OAVs. Different alternatives based on headspace techniques will be discussed.

Another controversial question is related to the strategy used for generating GC-O signals. The most frequent choice of AEDA can be explained just in the attribution of a poor quantitative value to the FD factors. Most effective strategies will be discussed in this context. Following, quantitation and the need for using adequate internal standards will be also discussed. The need to pay attention to the different chemo-physical interactions existing between aroma molecules and matrix components will be highlighted.

Finally, the interest of building models relating well the GC-O signal, well the quantitative information to the sensory properties of the product will be briefly discussed, highlighting some pressing challenges.

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