



Characterization of the Odor-Active Constituents of Fragrant Natural Raw Materials

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The determination of the most important olfactory contributors of a fragrant natural raw material can be an extremely long and complex task, which requires the combination of very efficient analytical techniques. Indeed, the characterization of these components is generally difficult since the main contributors are often strongly potent odorants contained only in trace amounts, and therefore, their identification requires an exhaustive analysis of the whole mixture. Consequently, there is still a lack of accurate knowledge about the main odoriferous constituents for many natural raw materials, and this situation is paradoxical when it concerns materials widely used for their odorant properties in the flavor and fragrance industry. This presentation will describe several examples of analytical investigations focused on the determination of the main odorant contributors of fragrant raw materials such as Atlas cedarwood, frankincense, and vetiver essential oils. This last material is one of the richest essential oil in terms of number and structural diversity of its constituents. The GC-Olfactometry analyses of this oil and its transformation products (vetiveryl acetate) led to the characterization of several strongly odorant sesquiterpenic derivatives among the key contributors of the vetiver woody fragrance. Logically, the next step following such identifications is the industrial production of these substances. However, in the case of vetiver odorants, the total synthesis of these complex sesquiterpenoids is generally not economically feasible on large scale applications. Therefore, we developed another approach based on the hemisynthesis of these compounds from zizanoic acid, extracted from Brazilian vetiver essential oil which proved to be the most promising source of this precursor. The transformation of zizanoic acid is based on an original eco-friendly procedure, which will be detailed in this presentation.