

## VOC profile of high moisture mozzarella as affected by the processing temperature

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The curd-stretching phase is one of the pivotal steps of mozzarella cheesemaking that contributes to the formation of the physical, chemical and microbiological characteristics of the product. In this processing phase, high temperature levels must be reached. In order to contribute to reduce the energy consumption, a study was undertaken to assess the effect of stretching at lower temperature on the VOC profile of high moisture mozzarella made using two different stretching temperatures (application of water at 70 and 90°C). The experimental design also involved the preparation of aseptic samples by the addition of sodium azide, in order to distinguish the changes caused by microbial activity from those directly connected to heating. The results highlighted that the VOC profile was mostly connected to microbial activities, as evidenced by the high presence of microbial-derived metabolites such as 2-nonanone, 2 and 3-methylbutanal, ethanol, 3-methylbutanol and 3-methylbutanoic acid. In contrast, the effect of heating was less important, and had a different weight in the presence or absence of microbial activity. From the sensory point of view, the sample stretched at a lower temperature presented the highest (and more pleasant) odor intensity in the samples without sodium azide, whereas the opposite was found for the aseptic samples. It was concluded that when microbial activity is present, a lower stretching temperature better preserves the aroma of mozzarella, whereas a higher stretching temperature improves the overall flavor of mozzarella made without starters, probably through heat-induced reactions, such as Strecker and Maillard.