ULTRASOUND PRETREATMENT INFLUENCES FLAVOR PROFILE OF DRY-CURED HAM SLICES

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I. INTRODUCTION

Dry-cured ham is produced with the whole hind leg of pig as raw material which is usually sliced, vacuum packaged and stored at 4 ºC for preservation before sale [1]. Nevertheless, the quality (flavor, texture, color, etc.) of dry-cured ham slices is easily prone to be impaired during long term vacuum storage decreasing their acceptability when evaluated by trained panel although not appreciated by consumers [2]. Ultrasound is a promising technology to improve the quality profile of meat products [3]. However, the investigation of ultrasound-induced flavor changes during the storage of dry-cured ham slices is still lacking.

II. MATERIALS AND METHODS

2.1 Sample preparation

The experimental study employed 6 hams from two different dry-cured times (9 m and 12 m), which were submitted to two treatments (control and ultrasound) and vacuum storage at refrigeration for 0, 20, and 40 d. Ultrasound parameters were set as 200 W (water bath, 35 kHz) and 30 min.

2.2 Sensory evaluation and volatile compounds analysis

The determination of volatile compounds in the headspace of dry-cured ham samples was performed by using GC-MS [4].

2.3 Statistical analysis

Data were processed by XLSTAT2018 software, and the significant significance was set as $p < 0.05$.

III. RESULTS AND DISCUSSION

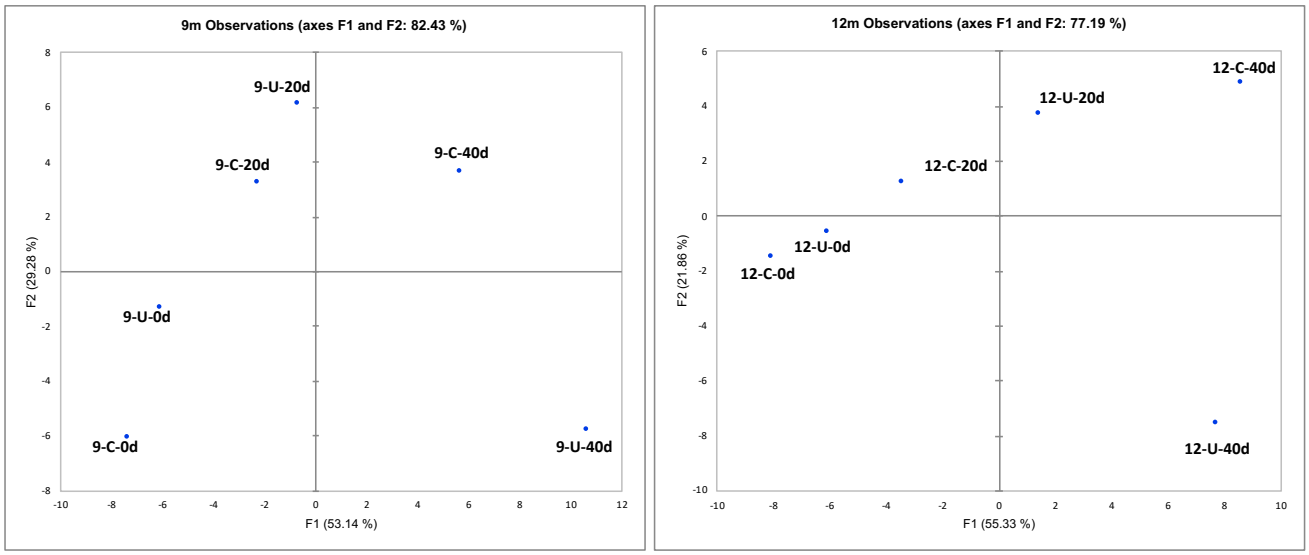

Figure 1. PCA plot of volatile compounds of 9 m and 12 m ham slices samples (C, Control; U, ultrasonic group) after refrigerated vacuum storage for 0, 20 and 40 d [5].

A total of 76 volatile compounds were identified in the 9 m and 12 m dry-cured ham samples. As shown in Figure 1, along PC1, 9 m or 12 m ham samples were distinguished by storage time with locating from left to right as the storage time progressed. Along PC2, there was no obvious separation between ultrasonic sample and control at 0 d and 20 d of storage while a distinct difference appeared at 40 d of storage. The above results indicate that ultrasound had significant influence at long vacuum storage times. Sensory results (data not shown) at the 40 d of storage of dry-cured hams revealed the ultrasound had a positive effect on pleasant odors (cured and nutty notes) which were related to the increase of 3-methyl-butanal, 2-pentyl-furan, 2-heptanone and 2-nonanone as shown in Figure 2.

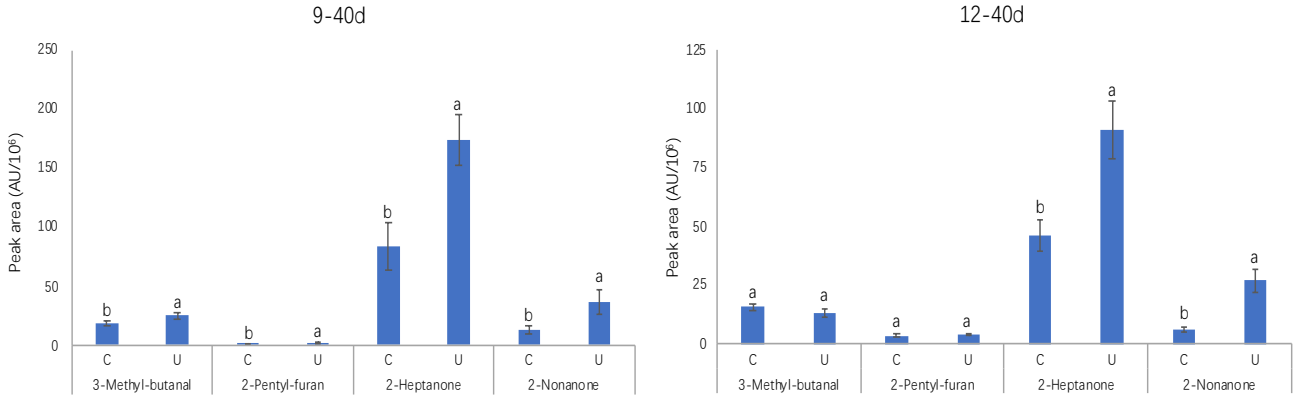

Figure 2. The peak area of volatile flavor compounds related with cured and nutty notes in 9 m and 12 m ham slices samples after refrigerated vacuum storage for 40 d (C, Control; U, ultrasonic group).

IV. CONCLUSION

The application of ultrasound to dry-cured ham slices improved the flavor characteristics during the vacuum refrigeration storage. The volatile profile differences caused by ultrasound were significantly increased in both hams and at longer storage times.

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