Impact Of Technological Post-Harvest Processing On The Production Of Chocolate Aroma Compounds In Raw Cocoa Beans Originated From Côte d’Ivoire

Material and Methods

Cocoa beans were extracted from mixed Ivorian 1st generation of hybrids (Amelonado x West African Trinitario) cocoa pods. They were prepared at South East of Côte d’Ivoire according to controlled pod opening delay, methods and time of fermentation, turnings of fermenting beans and sun-drying (Figure 1).

A total of twelve fermentation processes were realized. In each fermentation process, three samples were prepared and analysed in triplicate.

Volatile aroma compounds were analyzed by SPME-GC-MS method and statistical analysis of data were done by ACP.

Results

- A total of 30 aroma compounds grouped into six chemical compounds families were detected (Table I).
- Fermented cocoa beans from 2 days opening delay pods contained more aroma compounds than cocoa from 8 days opening delay pods (Figure 2).
- Like turning of fermenting beans, fermentation technique (Figure 3) did not influence the formation of aroma compounds in raw cocoa beans.
- The analysis of importance of fermentation’s day was realized on each pod delay. For the first delay, the fermented cocoa after 2 days were characterized largely by alcohol aroma compounds while 6 and 7 fermented cocoa contained aroma compound belonging to several chemical families (Figure 4).
- We observed the same conclusion for the second delay pods, but after two days, in addition of alcohols, some esters (ethyl acetate, isobutyl acetate 2 and 3 methylbutyl acetate) were also most abundant.

Conclusion

Formation of aroma compounds in raw cocoa beans is depending both on the pods opening delay and the fermentation time but not on the fermentation method neither turning of beans.

Recommendation

In order to improve raw cocoa aroma quality, pods must be opened for 2 post-harvest days and beans fermented for at least 4 days.

References

