

VOLATILE PROFILE OF CITRUS FIBER/BLACKBERRY JUICE FREEZE-DRIED COMPLEXES



Ivana Buljeta ¹, Josip Lukić ¹, Anita Pichler ¹, Josip Šimunović ², Mirela Kopjar ^{1*}
¹ Faculty of Food Technology Osijek, Josip Juraj Strossmayer University of Osijek, F. Kuhača 18, 31000 Osijek, Croatia
² Department of Food, Bioprocessing and Nutrition Sciences, North Carolina State University, Raleigh, NC 27695, USA
*mirela.kopjar@ptfos.hr



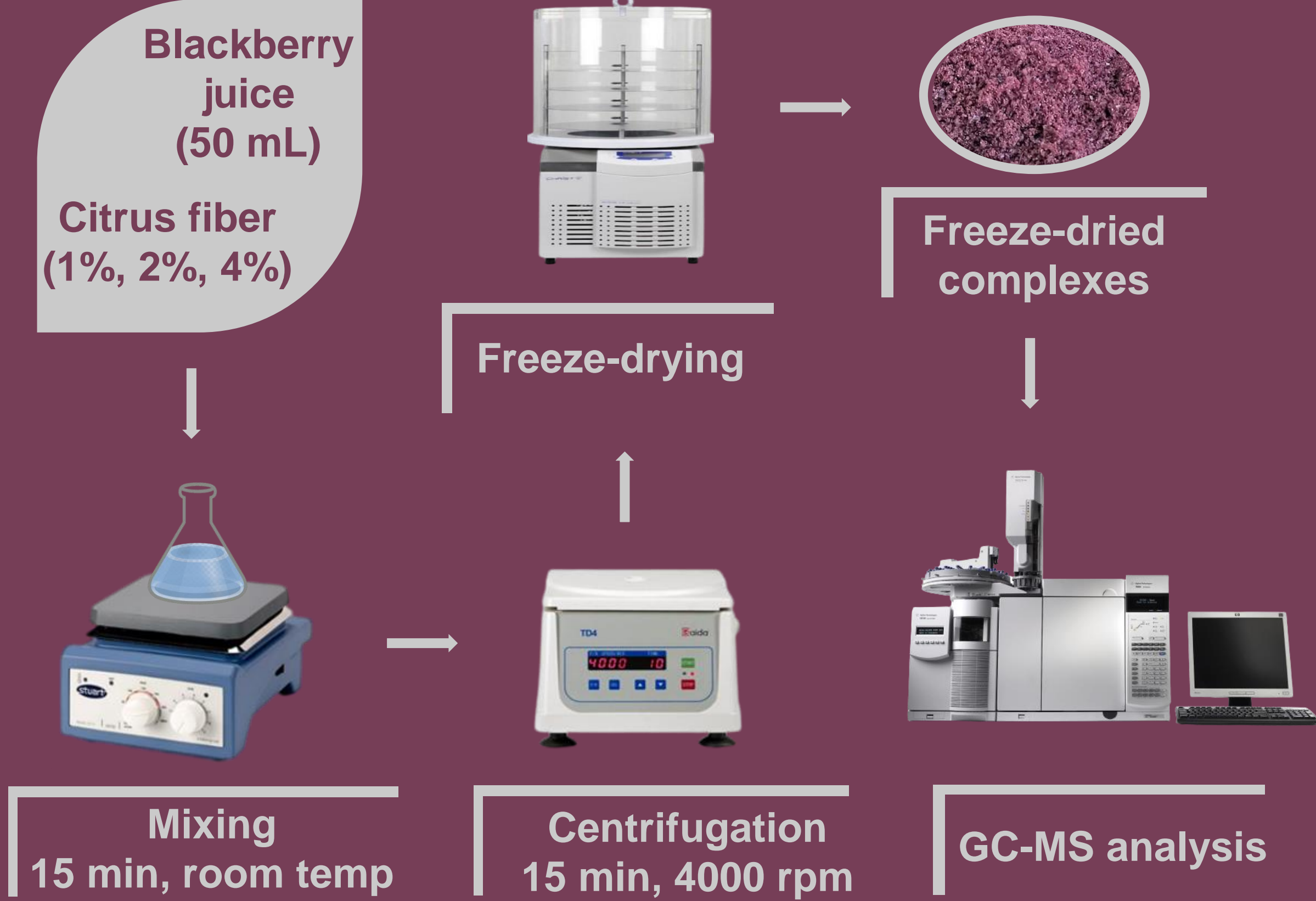
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INTRODUCTION

Flavor has a strong impact on food quality and therefore its preservation and controlled release are of great importance. Dietary fibers are known as efficient carriers of volatile compounds. Besides that, they had proven health benefits (reduction of hypertension, obesity, etc.) which makes them an active field of research. In this study, citrus fibers were selected as carriers of blackberry juice flavor compounds and a freeze-drying method was applied to obtain dry complexes.

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MATERIALS AND METHODS



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RESULTS

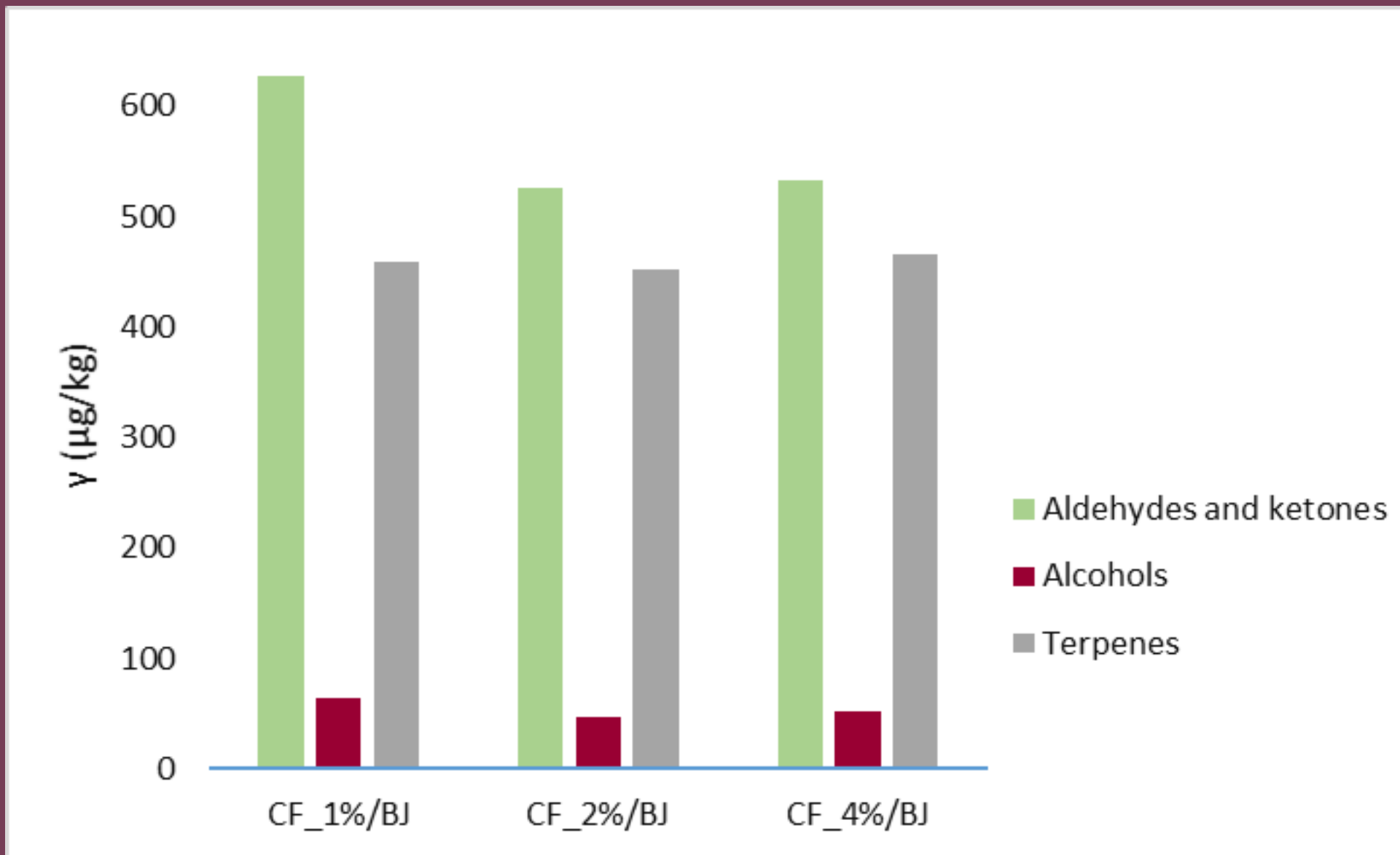
Table 1 Flavor compounds identified and quantified in citrus fiber/blackberry juice complexes

Volatiles	SAP*	SAS**
Aldehydes and ketones		
Hexanal	+	+
Heptanal	+	+
2-Heptenal	+	+
1-Octen-3-one	+	+
6-Methyl-5-hepten-2-one	+	+
2,4-Heptadienal	+	-
Octanal	+	+
Phenyl acetaldehyde	+	+
Octenal	+	-
2-Octenal	+	+
3,5-Octadien-2-one	+	+
Nonanal	+	+
2-Nonenal	+	+
Decanal	+	+
2-Decenal	+	+
2-Undecenal	-	+
4-Propylbenzaldehyde	+	-
2-Butyl-2-octenal	+	-
Geranylacetone	+	+
Acids		
Hexanoic acid	-	+
Alcohols		
2-Ethyl-1-hexanol	+	+
Benzenemethanol	+	-
1-Octanol	+	+
2-Phenylethanol	+	+
Decanol	+	-
Perillyl alcohol	+	+
Terpenes		
Limonene	+	+
Linalool	+	+
trans-Verbenol	+	-
trans-Carveol	+	+
Camphene	+	-
beta-Ionone	+	-
Valencene	+	+
beta-Maaliene	+	-

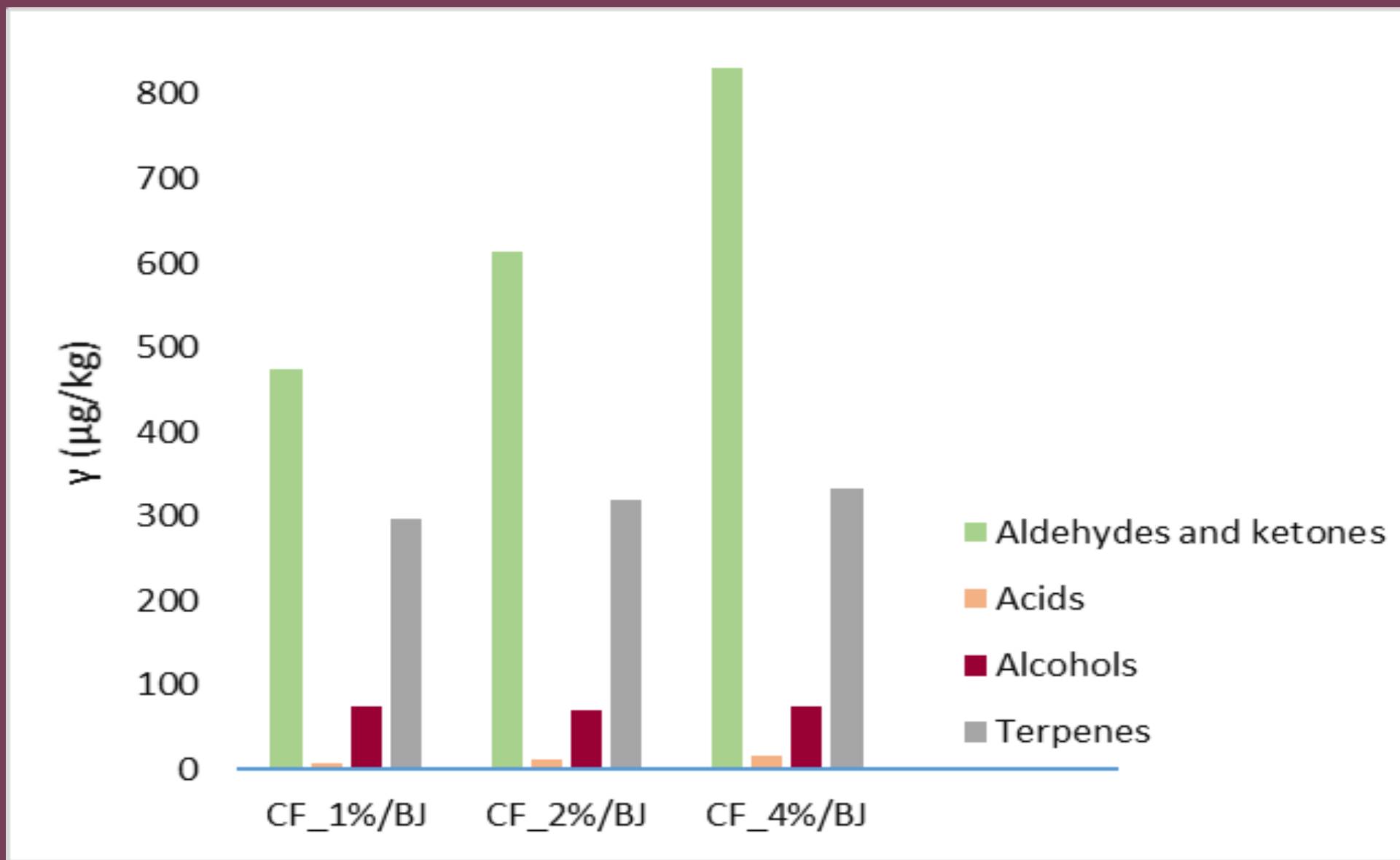
*samples after preparation

**samples after storage

***CF-citrus fiber; BJ-blackberry juice; 1%,2%,4%-amounts of CF



***Figure 1 Concentration of flavor compounds in complexes after preparation



***Figure 2 Concentration of flavor compounds in complexes after storage



***Figure 3 Representations of flavour notes in complexes

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DISCUSSION AND CONCLUSION

Using gas chromatography-mass spectrometry analysis, in the pre-storage complexes, 32 flavor compounds were identified and quantified while 10 of them were lost during storage, in addition to the identification of 2 new ones (Table 1). Most of flavor compounds were aldehydes and ketones (around 60%). Concentration of total flavor compounds on complexes before storage was the highest on complex with 1% of fiber while during storage, changes occurred and complex with 4% of fiber had the highest total concentration of flavor compounds (Figure 1 and Figure 2). Green and fatty notes were dominant, followed by floral, citrus, aldehydic, fruity notes (Figure 3). Our results showed a strong impact of dietary fibers concentration on the preservation of blackberry juice flavor compounds.

These dry complexes could have application in the food industry as flavoring agents for purpose of development novel, innovative foods.