

INCORPORATING APPLE AND GRAPE POMACE INTO FOOD PRODUCTS FOR A SUSTAINABLE FUTURE

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Introduction

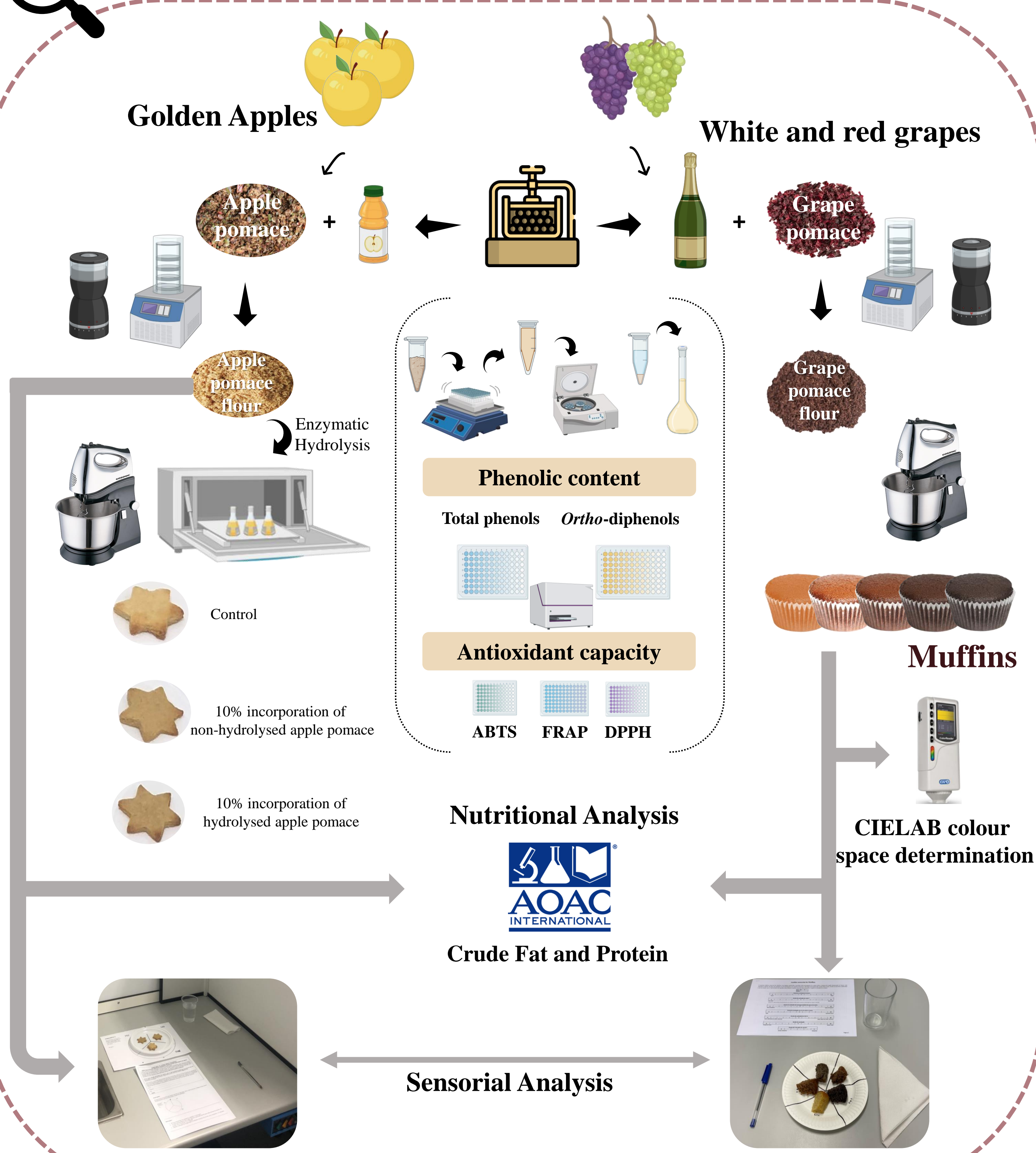
Conventional food waste utilization policies have primarily focused on reducing or preventing waste generation, rather than harnessing waste as a valuable source of food and feed components [1]. However, the growing global population and resource scarcity have spurred a shift towards a circular economy approach to food waste management. This approach emphasizes recycling and extracting value from waste materials, reintegrating them into the food supply cycle. Essentially, it aligns with the core tenet principle of the circular economy: 'waste equals food' [1,2].

Currently, products incorporating apple and grape pomace have been developed in plant-based foods, bakery items, meat and fish products, and dairy products [3].

Objective

Development of two bakery products incorporating apple and grape pomace for different target populations, thereby reducing waste and adding value to these by-products.

Material and Methods

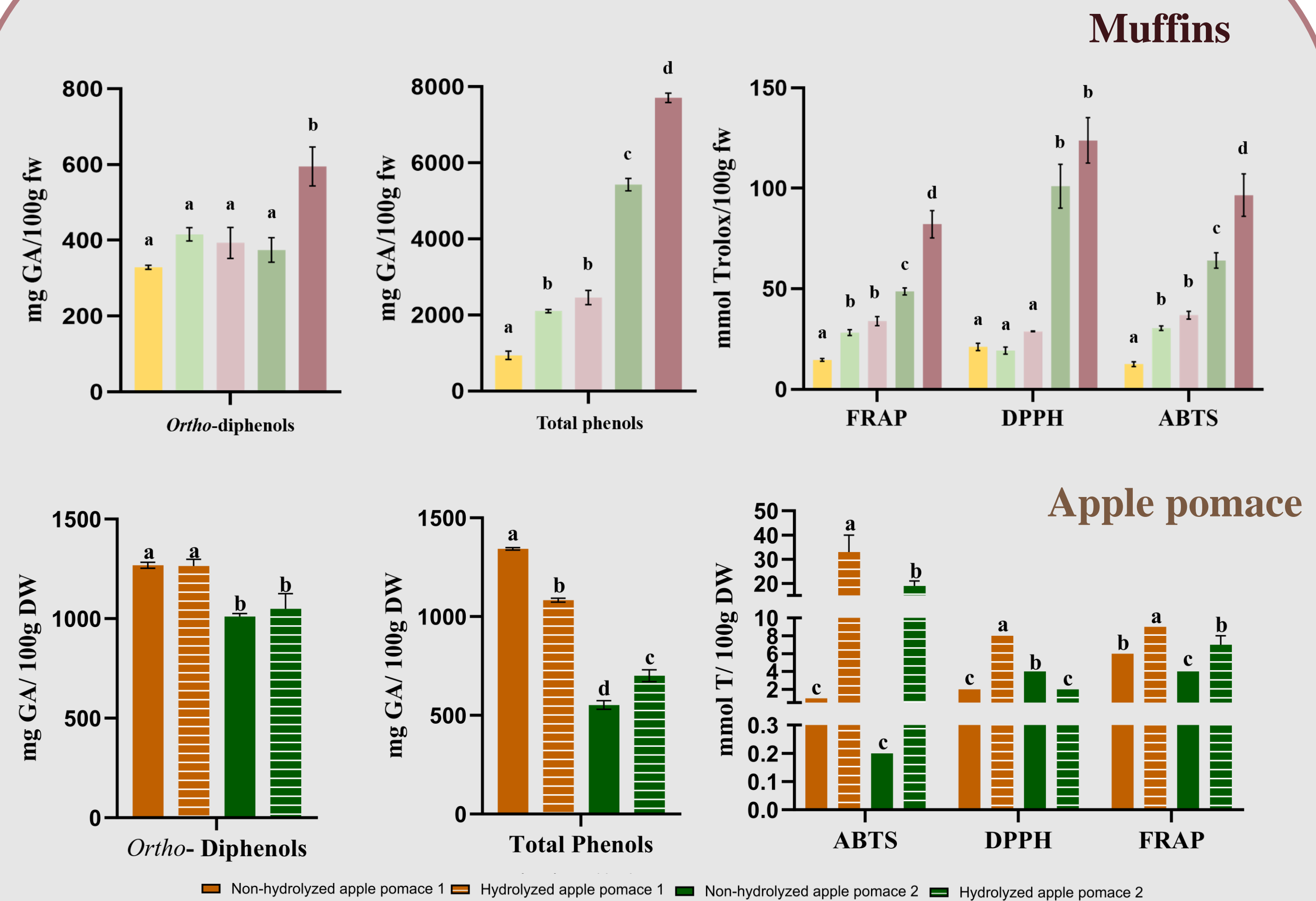


CONCLUSIONS

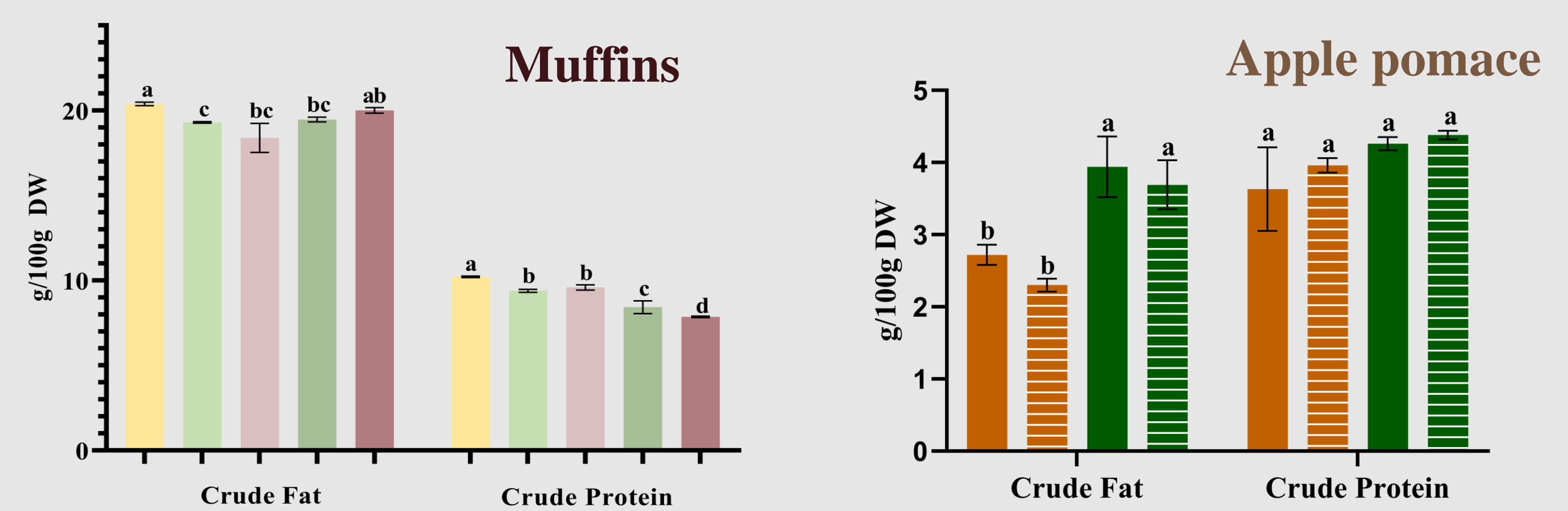
- The different apple batches presented significantly different phenolic contents and antioxidant capacities; Regardless of the batch under analysis, the phenolic content and antioxidant capacity were high and very promising;
- Overall the enzymatic hydrolysis lead to an increase on the phenolic content and antioxidant capacity
- The incorporation of the apple hydrolyzed pomace lead to an increase in the consumers acceptability and purchase intention.
- Overall the incorporation of grape pomace increased the phenolic content and the antioxidant capacity of muffins and leads to significant differences in the color parameters compared with the control muffin.
- The 20% red grape pomace muffin was the one with the highest acceptability and the one with the best results in terms of phenolic content and antioxidant capacity.
- Red grape pomace can be a good raw material for the enrichment of muffins, but more analysis should be done.

Results

Spectrophotometric Assays

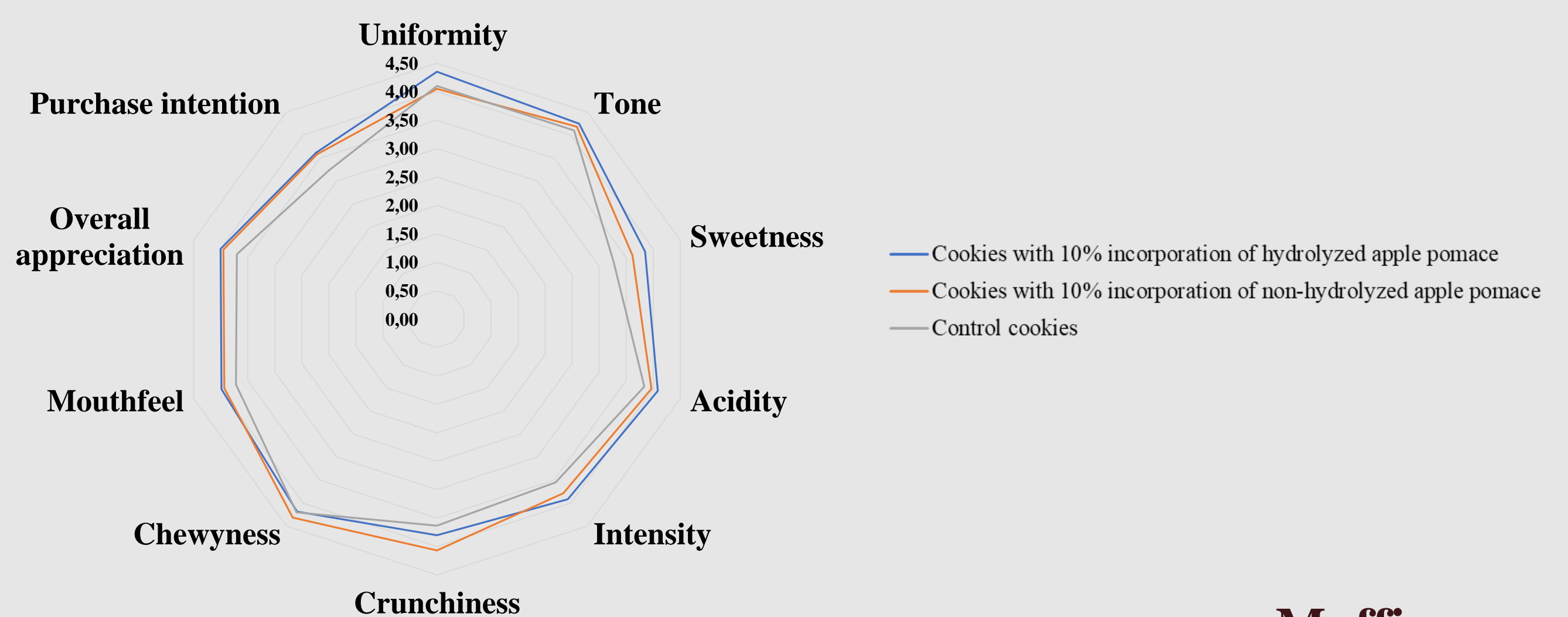


Nutritional Analysis

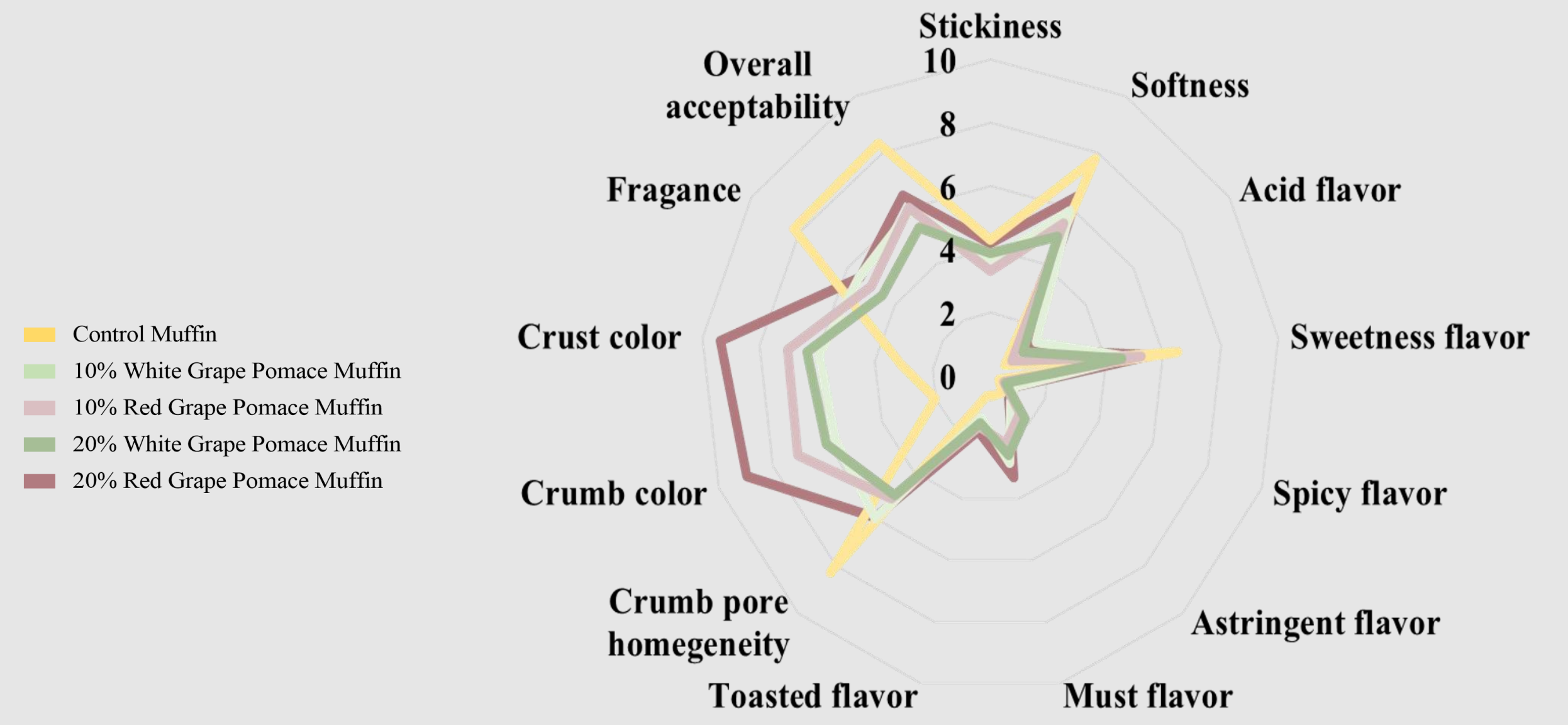


Sensorial Analysis

Apple pomace



Muffins

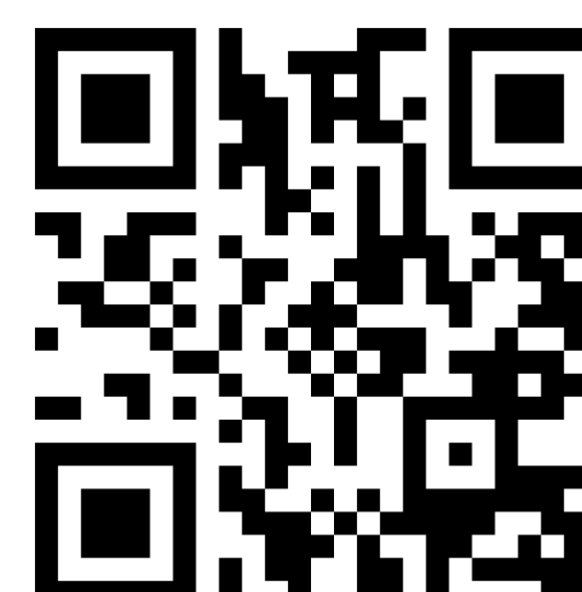


CIELAB Colour Space Parameters

Parameters	Control muffin	10% White pomace muffin	20% White pomace muffin	10% Red pomace muffin	20% Red pomace muffin
L*	76.17 ± 1.23 ^a	49.68 ± 0.50 ^d	50.00 ± 1.48 ^d	46.13 ± 1.36 ^c	34.20 ± 0.87 ^b
a*	1.05 ± 0.90 ^a	6.76 ± 0.37 ^c	5.78 ± 0.46 ^c	4.12 ± 0.27 ^b	6.30 ± 0.07 ^c
b*	30.48 ± 0.52 ^c	26.08 ± 0.64 ^d	19.93 ± 1.13 ^c	17.26 ± 0.19 ^b	9.10 ± 0.15 ^a

The values are presented as mean ± standard deviation. An analysis of variance (ANOVA) was performed followed by a post-hoc Tukey. Different letters correspond to significant differences between each muffin and apple pomace ($p < 0.05$). GA – Gallic Acid, Dw – dry weight, Fw – fresh weight

REFERENCES



Acknowledgments

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Topic: Innovative and sustainable food ingredients and products



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