Characterization of silver skin of the *Coffea arabica* variety from Brazil and *Coffea canephora* variety from Vietnam, for its use as an ingredient in novel foods.

Laura Candela-Salvador, Raquel Lucas-González, Juana Fernández-López, José Ángel Pérez-Álvarez, Manuel Viuda-Martos
IPOA Research Group, Instituto de Investigación e Innovación Agroalimentaria y Agroambiental (CIAGRO-UMH), Miguel Hernández University, Orihuela, 03312 Alicante, Spain
*e-mail: laura.candela03@goumh.umh.es

OBJECTIVE

This study evaluated the physicochemical properties, antioxidant capacity and techno-functional properties of silverskin obtained from roasted coffee varieties *Coffea arabica* from Brazil and *Coffea canephora* from Vietnam.

INTRODUCTION

Coffee consumption has increased considerably in recent decades, driven by:

Population growth | Urbanisation | Rising incomes

This has led to increased coffee production, with a significant impact on the economy and the environment.

One of these co-products is a membrane that coats the coffee bean and is released during the roasting process of green coffee (silverskin). The silver skin is a thin tegument that constitutes approximately 4.2% (w/w) of green coffee beans. This co-product is currently used as fertiliser/compost or fuel. However, it has great potential to be used in different applications, thanks to its properties.

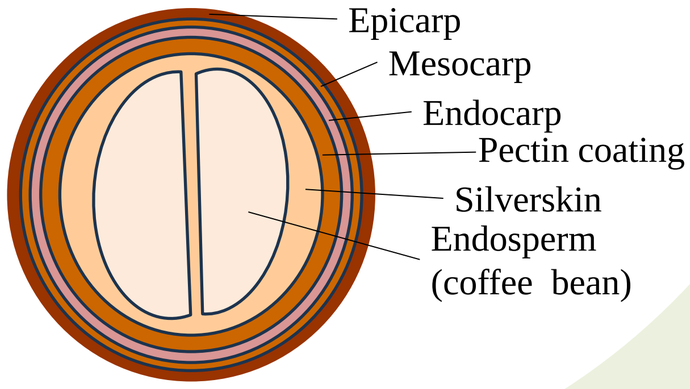
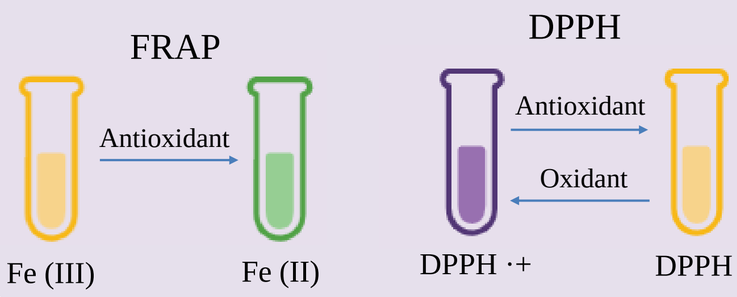


Figure 1. Coffee bean diagram.

MATERIALS AND METHODS

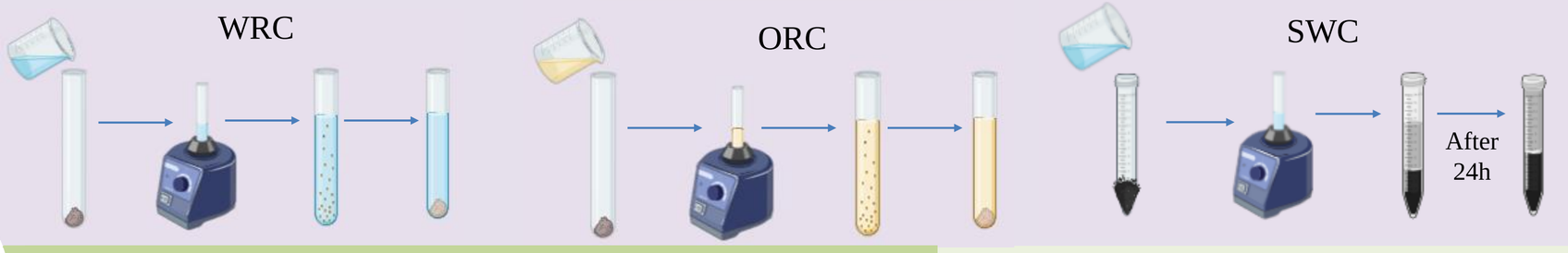
The skins were obtained after roasting the coffee beans and ground in a coffee grinder to obtain the flour used for the analyses (antioxidant activity, physicochemical properties and technofuncional properties).

Antioxidant activity



Physicochemical properties

Techno-functional properties



RESULTS AND DISCUSSION

Table 1. Antioxidant Capacity (FRAP, DPPH and ABTS) of coffee silverskin Brazil and Vietnam

	FRAP	DPPH	ABTS
Brazil	16.76±0.85^{b}	2.81±0.00^{a}	15.07±0.75^{a}
Vietnam	21.49±1.28^{a}	2.81±0.00^{a}	15.07±0.18^{a}

Values with different letter within the same column indicate significant differences *($p < 0.05$)* according to Tukey´s multiple range test.

FRAP, DPPH and ABTS results are expressed in mg Trolox/g.

Table 2. Physicochemical Properties of coffee silverskin Brazil and Vietnam

	Aw	pH
Brazil	0.48±0.02^{a}	4.86±0.00^{b}
Vietnam	0.48±0.00^{a}	4.78±0.00^{a}

Values with different letter within the same column indicate significant differences *($p < 0.05$)* according to Tukey´s multiple range test.

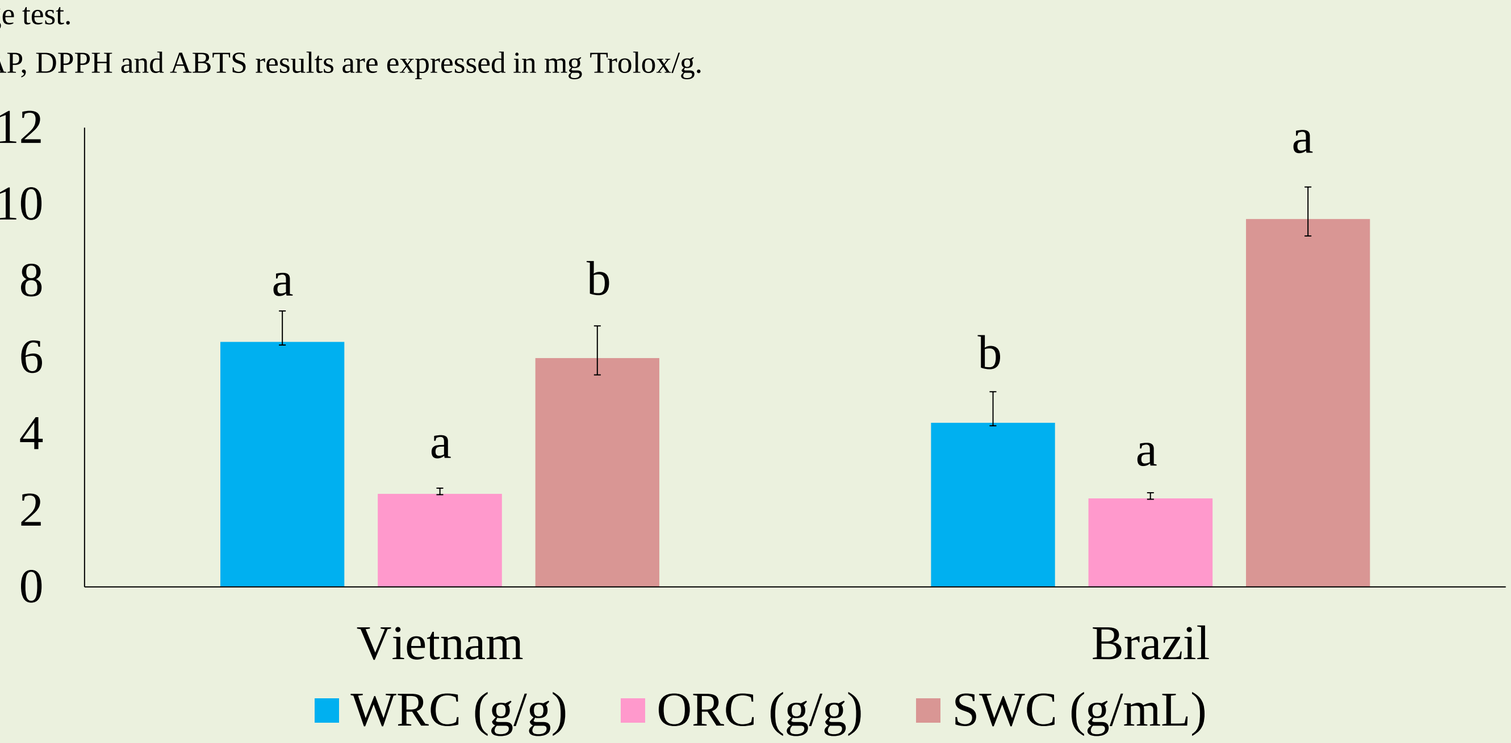


Figure 2. Technofunctional Properties WRC, ORC, and SWC of coffee silverskin Brazil and Vietnam.

Values with different letter within the same column indicate significant differences *($p < 0.05$)* according to Tukey´s multiple range test.

CONCLUSIONS

The results obtained show that the utilization of coffee silverskin can help to reduce food waste generated by coffee production. Different origins and species of coffee beans may cause differences in antioxidant activity. Further studies on coffee silver skin should be conducted to promote its use in different formulations for the development of new food products.

ACKNOWLEDGMENTS

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