

CHEMICAL COMPOSITION OF *SICANA ODORIFERA* (VELL.) NAUDIN EPICARP

Bianca R. Albuquerque^{1,2}, Maria Inês Dias¹, M. Beatriz P.P. Oliveira², Isabel C.F.R. Ferreira¹, Lillian Barros^{1*}

¹ Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Bragança, Portugal

² REQUIMTE, Faculty of Pharmacy, University of Porto, Porto, Portugal

*lillian@ipb.pt



INTRODUCTION

Sicana odorifera (Vell.) Naudin, belonging to the Cucurbitaceae family, is a fruit probably native to Brazil, also found in other Latin America countries [1,2]. This fruit presents a rigid purple-black inedible epicarp, considered as a bioresidue after the fruit processing, but which could be an interesting source of bioactive compounds, mainly anthocyanins [1,2]. In order to provide a valorization of this bioresidue, the present work sought to determine part of the chemical composition, namely tocopherols, organic acids and phenolic compounds, including anthocyanins, present in the epicarp of *S. odorifera*.

Sicana odorifera fruits



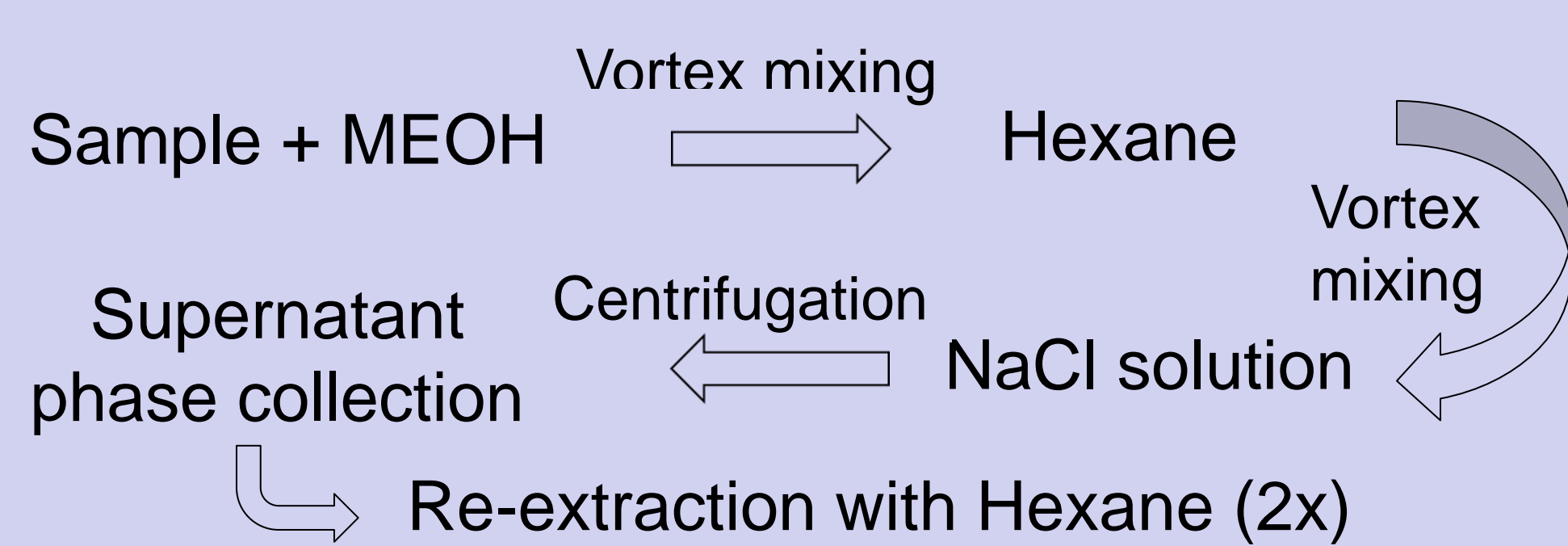
Dry Epicarp

METHODOLOGY

CHEMICAL CHARACTERIZATION

Tocopherols

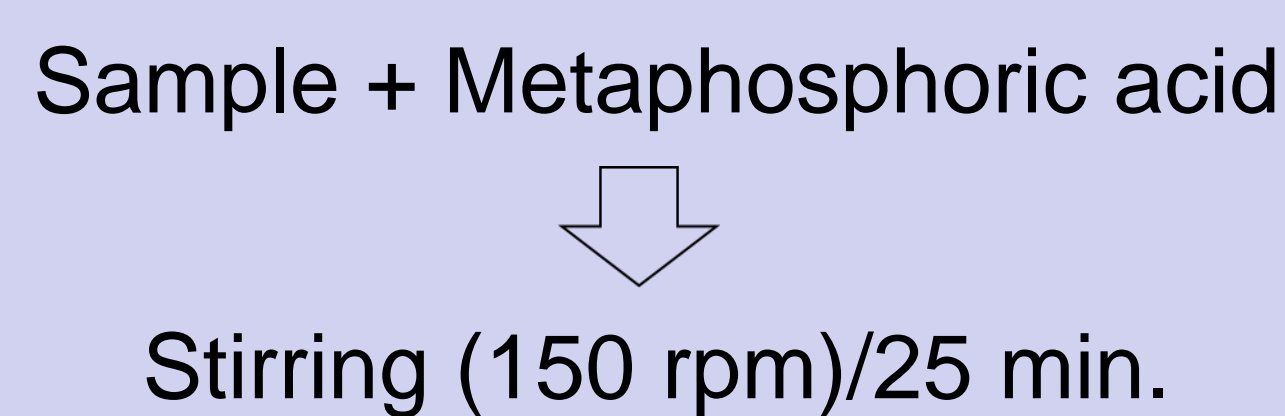
EXTRACTION



ANALYSIS
by HPLC-FL

Organic acids

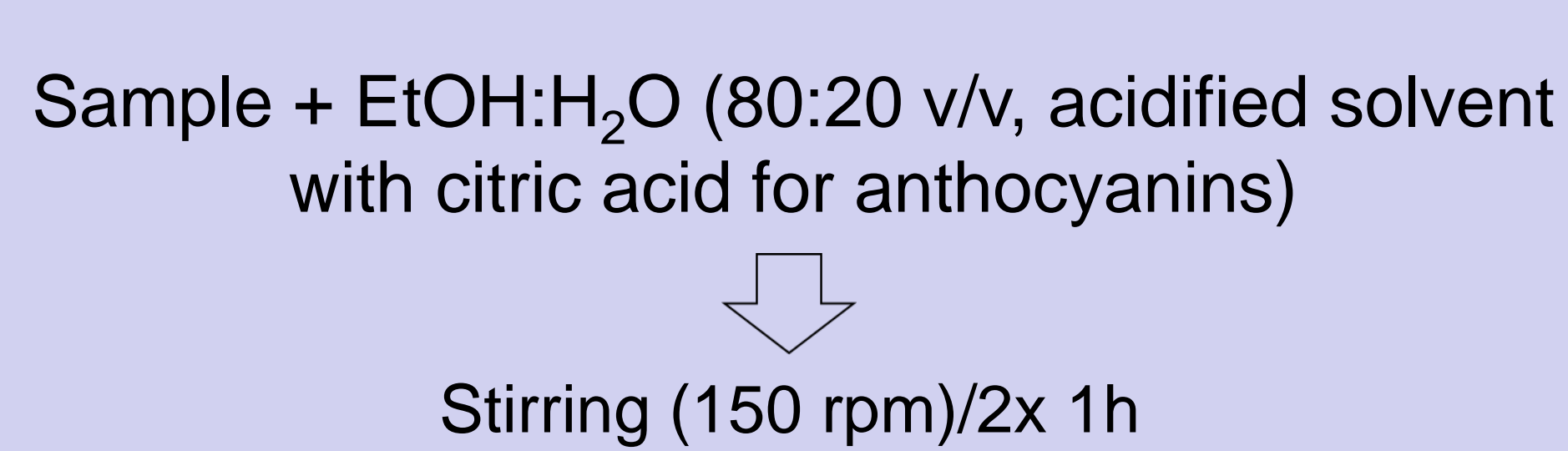
EXTRACTION



ANALYSIS
by UFLC-PDA

Phenolic compounds

EXTRACTION



ANALYSIS
by HPLC-DAD-ESI/MS

CONCLUSION

The results obtained in this study allowed to conclude that *S. odorifera* epicarp has a high amount of tocopherols and anthocyanins, which makes it suitable to be explored as a source of bioactive molecules for diverse applications, such as food colorant and natural antioxidants.

RESULTS

Table 1. Tocopherol and organic acid composition of the *S. odorifera* epicarp.

Tocopherol isomers	mg/100 g dw
α-tocopherol	18.5±0.7
γ-tocopherol	2.4±0.2
β-tocopherol	164.9±0.4
δ-tocopherol	180±2
Total	366±2
Organic acids	g/100 g dw
Oxalic acid	0.322±0.003
Shikimic acid	tr
Citric acid	3.05±0.08
Fumaric acid	tr
Total	3.38±0.08

tr- traces

According to table 1, the *S. odorifera* epicarp showed a composition rich in tocopherols, with emphasis on the amount of δ- and β-tocopherol isomers. Regarding organic acids, citric acid was the main compound detected.

Table 2. Phenolic compounds of the *S. odorifera* epicarp.

Non-anthocyanin compounds						
Peak	Rt (min)	λmax (nm)	[M-H] ⁻ (m/z)	MS ² (m/z)	Tentative identification	mg/g dw
1	16.5	354	609	301(100)	Quercetin-O-deoxyhexosyl-hexoside	7.91±0.04
2	19.75	348	593	285(100)	Kaempferol-O-deoxyhexosyl-hexoside	2.20±0.06
Total						10.1±0.1
Anthocyanin compounds						
Peak	Rt (min)	λmax (nm)	[M] ⁺ (m/z)	MS ² (m/z)	Tentative identification	mg/g dw
3	15.07	514	595	449(32),287(100)	Cyanidin-O-deoxyhexosyl-hexoside	21.5±0.9
4	18.54	504	579	433(21),271(100)	Pelargonidin-O-deoxyhexosyl-hexoside	2.5±0.1
Total						24±1

Concerning phenolic compounds (Table 2), the sample showed a high amount of anthocyanins, which can justify its intense purple-black color. Furthermore, a considerable amount of quercetin derivative was detected, while a kaempferol derivative was found in the lowest concentration.

Acknowledgement

Foundation for Science and Technology (FCT, Portugal) for financial support through national funds FCT/MCTES to CIMO (UIDB/00690/2020) and B.R. Albuquerque research grant (SFRH/BD/136370/2018). National funding by FCT, P.I., through the institutional scientific employment program-contract for M.I.D., and L.B. contracts. FEDER-Interreg España-Portugal programme for financial support through the project TRANSCoLAB 0612_TRANS_CO_LAB_2_PT and to the European Regional Development Fund (ERDF) through the Regional Operational Program North 2020, within the scope of Project GreenHealth: Norte-01-0145-FEDER-000042 and the Project Mobilizador Norte-01-0247-FEDER-024479: ValorNatural®.

References:

- [1] M. L. Cádiz-Gurrea, M C. Villegas-Aguilar, F. J. Leyva-Jiménez, S. Pimentel-Moral, et al. Food Res. Int. 138 (2020) 109786.
- [2] C. Eva, C. Silva, B. Rocio, V. Rocio, M. Laura. Proceedings. 53 (2020) 10.

