EXPLORING THE BIOACTIVE POTENTIAL OF PHENOLIC COMPOUNDS RECOVERED FROM ONION SKIN WASTE (OSW) THROUGH SUBCRITICAL WATER EXTRACTION

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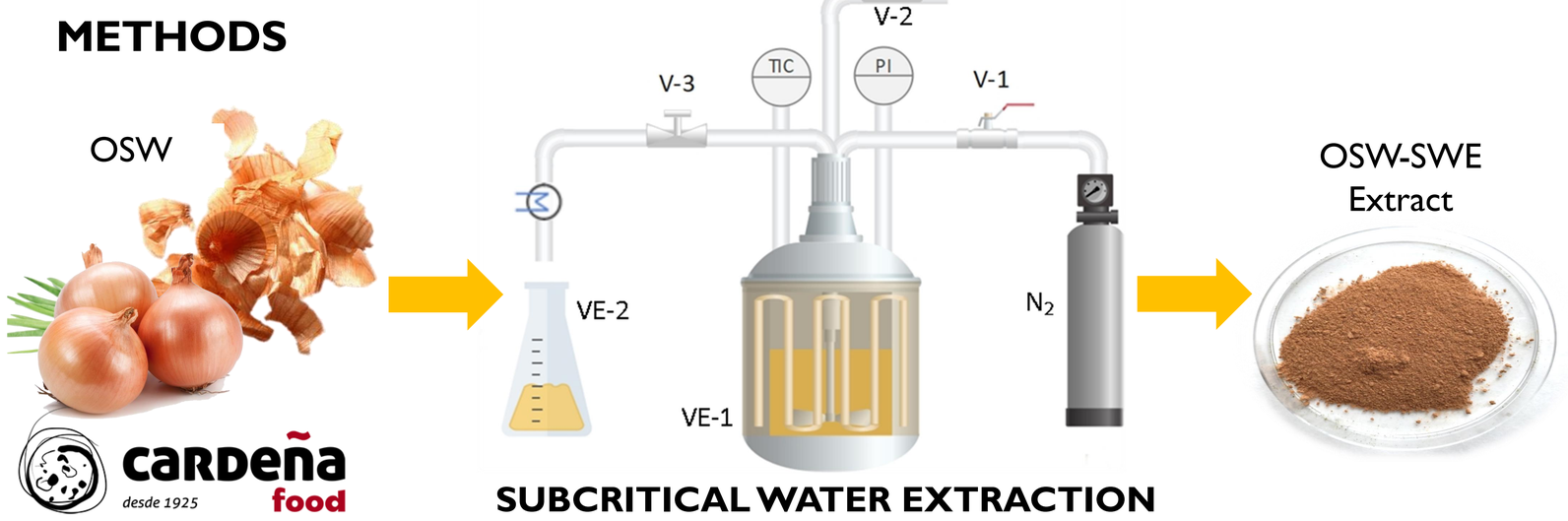
INTRODUCTION

The onion (*Allium cepa* L.) processing industry generates substantial inedible wastes which constitute an environmental risk. Nevertheless, these wastes could be valorized to obtain bioactive compounds with **antioxidant**, **anticancer** and **antidiabetic** properties [1]. For this purpose, subcritical water extraction (SWE) offers an eco-friendly approach by using pressurized hot water (100-374°C) with unique properties as solvent [2].

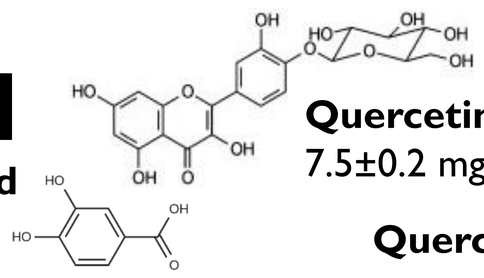
METHODS



SUBCRITICAL WATER EXTRACTION
(145°C, 50 bar, 50 min)

RESULTS

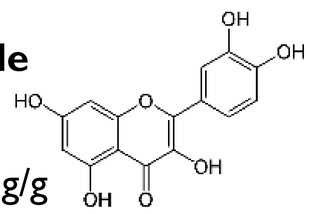
PHENOLIC PROFILE



Protocatechuic acid
20±3 mg/g

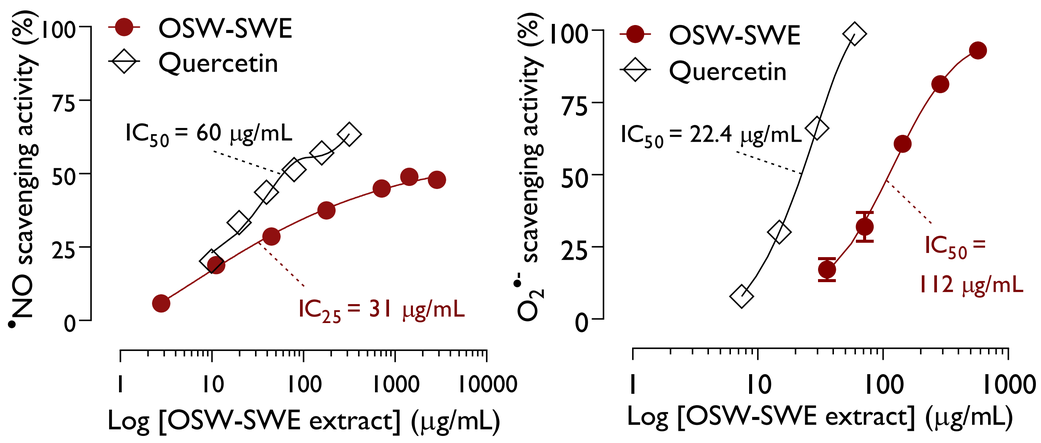
Quercetin-4'-*O*-glucoside
7.5±0.2 mg/g

Quercetin: 3.2±0.6 mg/g

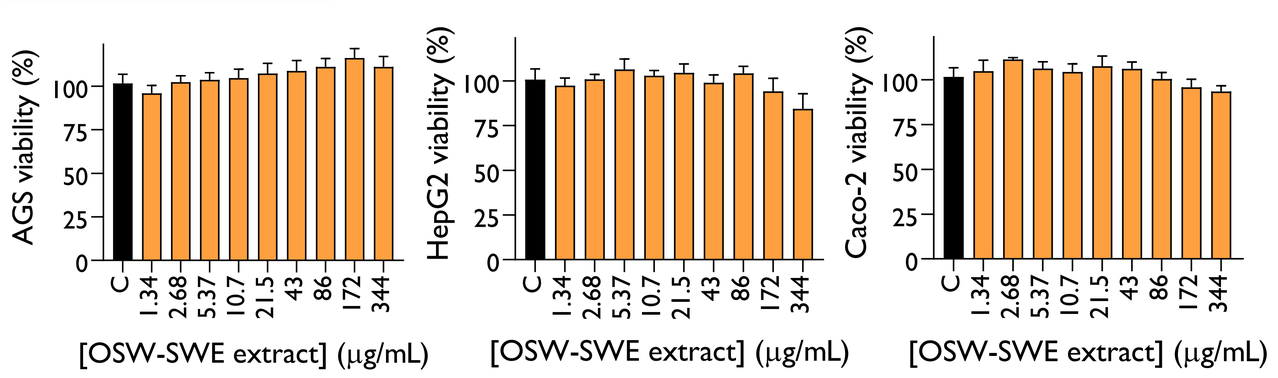


p-Coumaric acid + Quercetin-3-*O*-glucoside + Myricetin + Kaempferol + Isorhamnentin: 1.3±0.1mg/g

ANTIOXIDANT ACTIVITY



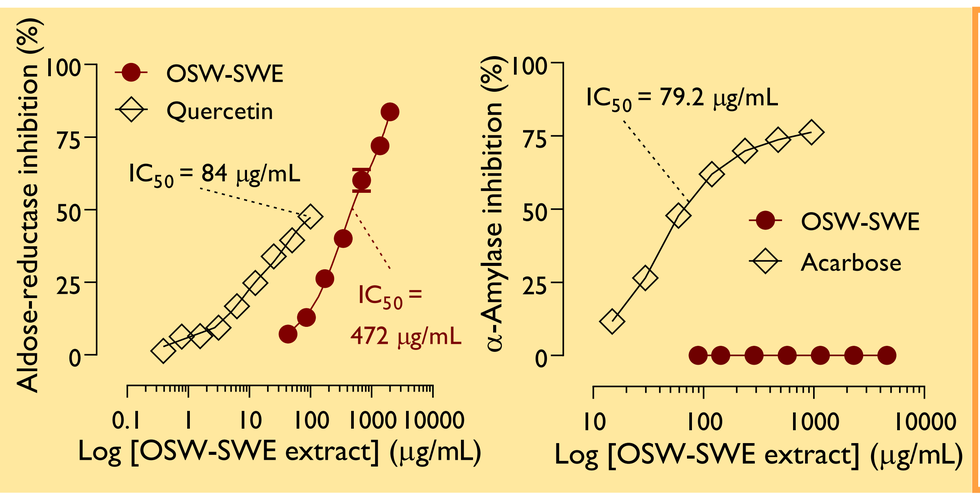
CELL VIABILITY

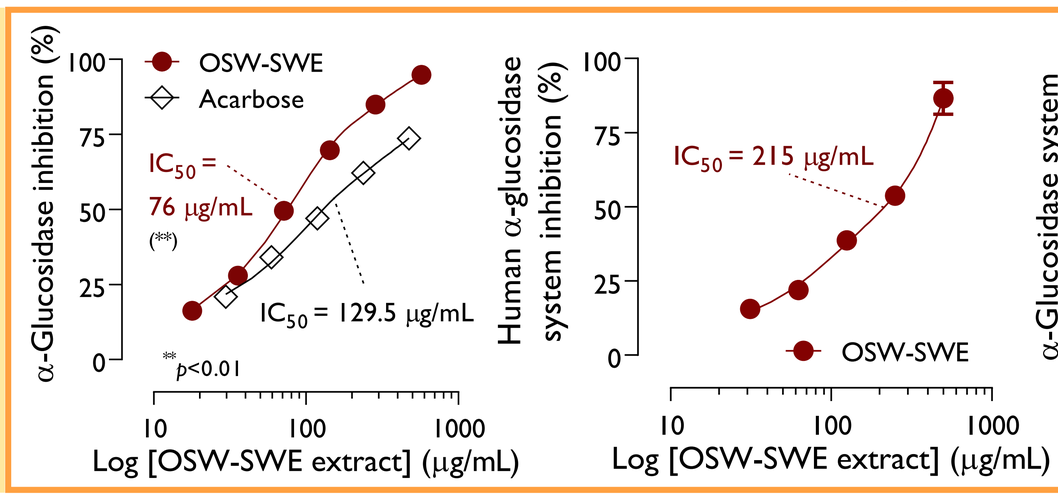


ANTIDIABETIC ACTIVITY

α-Glucosidase

Saccharomyces cerevisiae | Human Caco-2 cells homogenates | Human adherent Caco-2 cells





CONCLUSIONS

The SWE technology proves to be a valuable technology within a biorefinery concept for extracting valuable phenol-rich compounds from OSW, which can effectively block or slow down carbohydrates digestion and enhance the body's overall antioxidant status. Additionally, the OSW extract shows no cytotoxicity effects on AGS, HepG2 and Caco-2 human cells, making it a promising candidate for the development of pharmaceutical components or functional foods for diabetes therapy.

References: [1] N. Marefati et al. *Pharmaceutical Biology*, 59(1) (2021) 285-300. [2] E. Trigueros et al. *Journal of Applied Phycology*, 33 (2020) 1181-1194.

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