

# Bioactive Compounds from Pomegranate Peel and Seeds of *Big Full* Cultivar with Antimicrobial Activity

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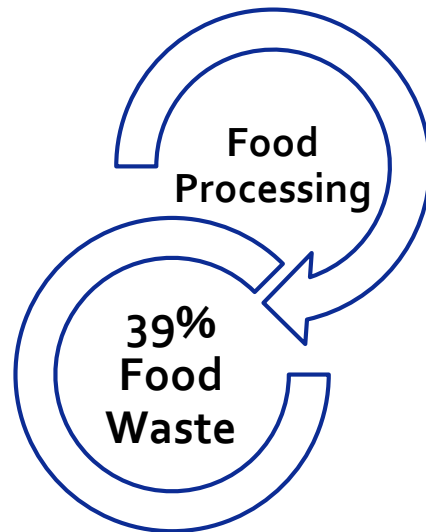
<sup>4</sup>CEB - Centre of Biological Engineering, University of Minho



# Motivation

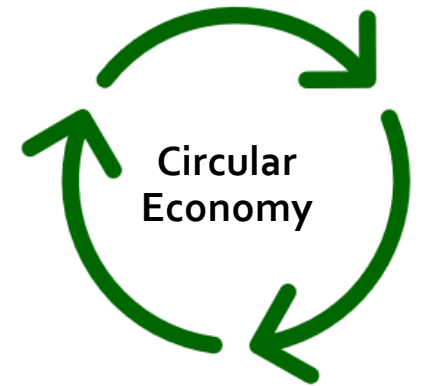


Agrifood by-products

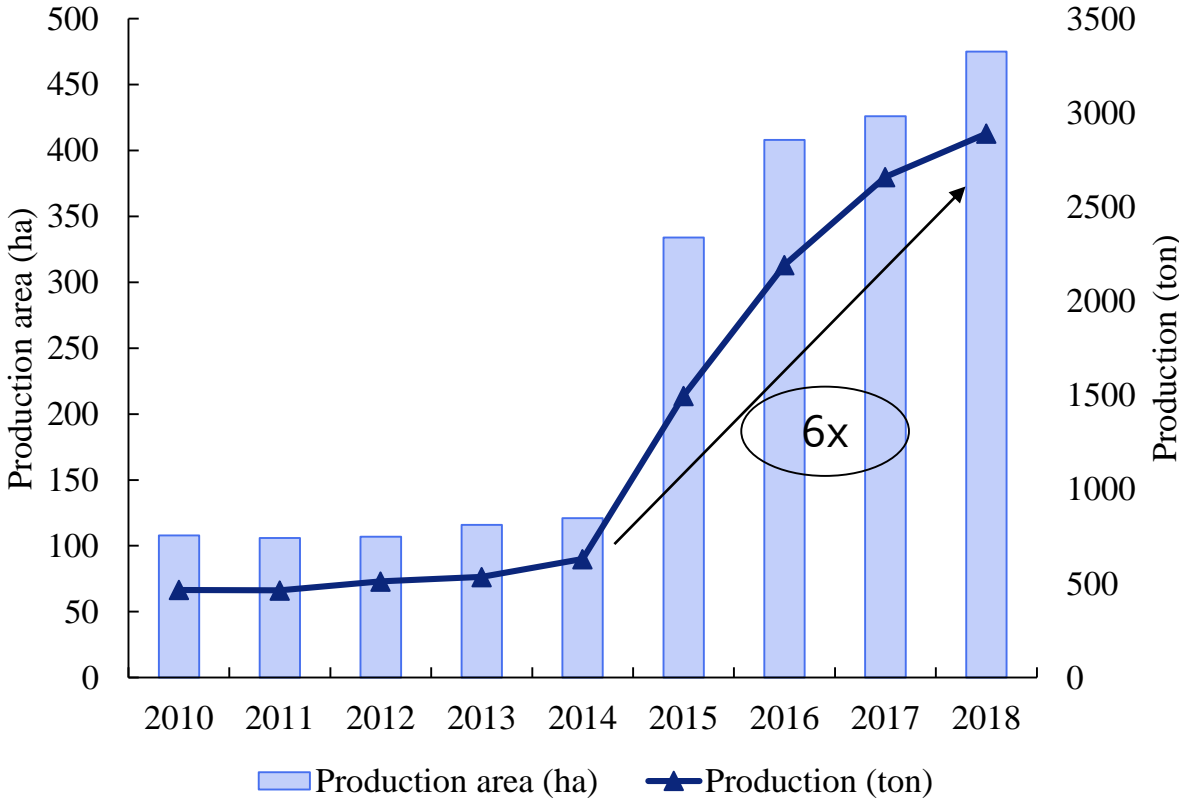


## Rich in Bioactive Activity

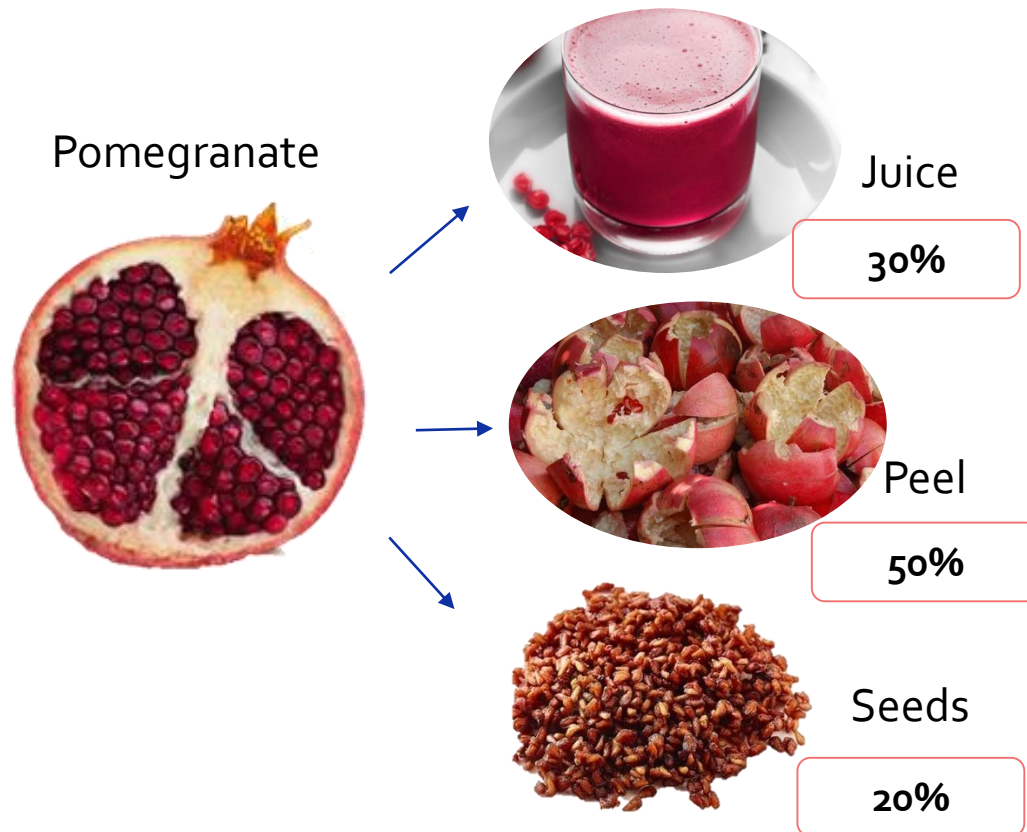
- Phenolic Compounds
- Flavonoids
- Antioxidant Activity
- Antimicrobial Activity



# Pomegranate production in Portugal



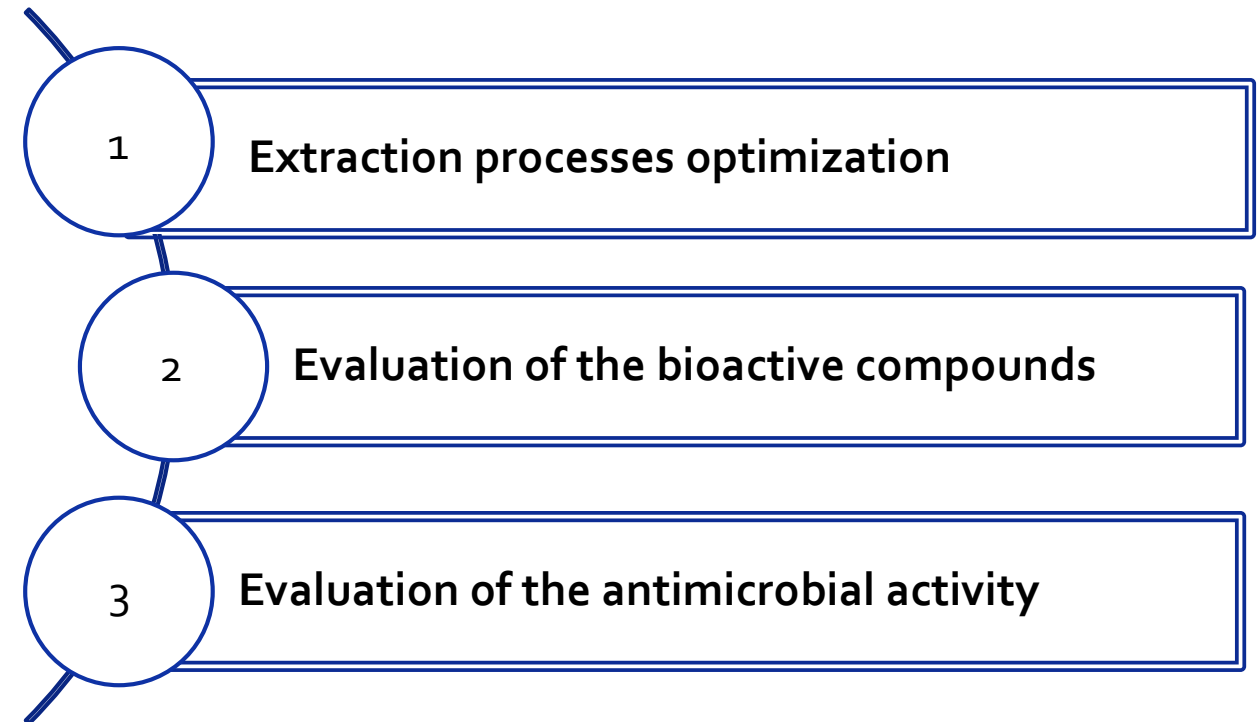
# Approach



Article

## Effect of Extraction Method on the Bioactive Composition, Antimicrobial Activity and Phytotoxicity of Pomegranate By-Products

Lara Campos <sup>1,2,\*</sup>, Luana Seixas <sup>3</sup>, Susana Dias <sup>1,2</sup>, António M. Peres <sup>4</sup>, Ana C. A. Veloso <sup>3,5,6</sup> and Marta Henriques <sup>1,2</sup>



# Methodology

## Material



**Big Full**

**POM Portugal Lda.  
(Alentejo, Portugal)**



**Peels and seeds  
powders**

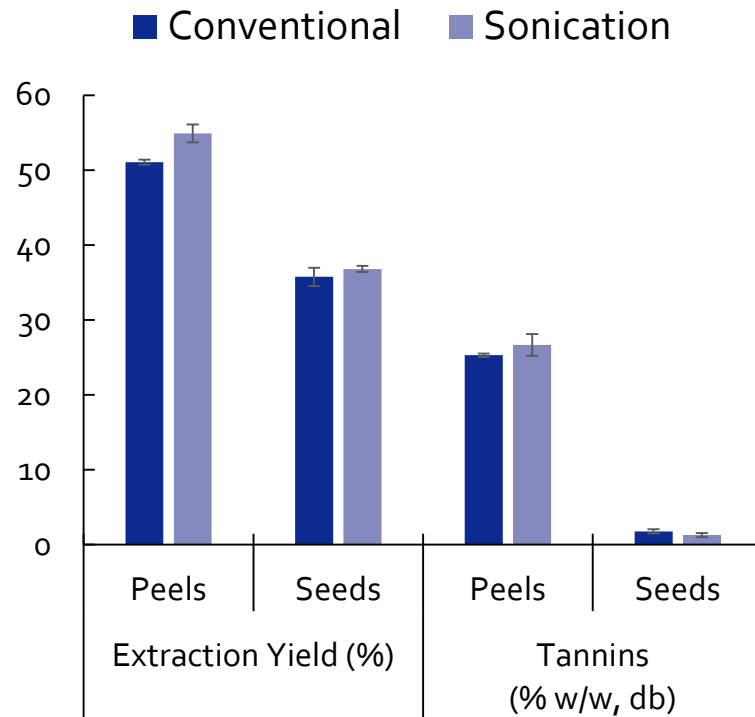
## Extraction

- S/L extraction
  - EtOH50%
  - 1 g:50 mL
- Conventional extraction
  - 50 °C
  - 4 h
- Sonication-assisted extraction
  - 20 kHz
  - 20 min

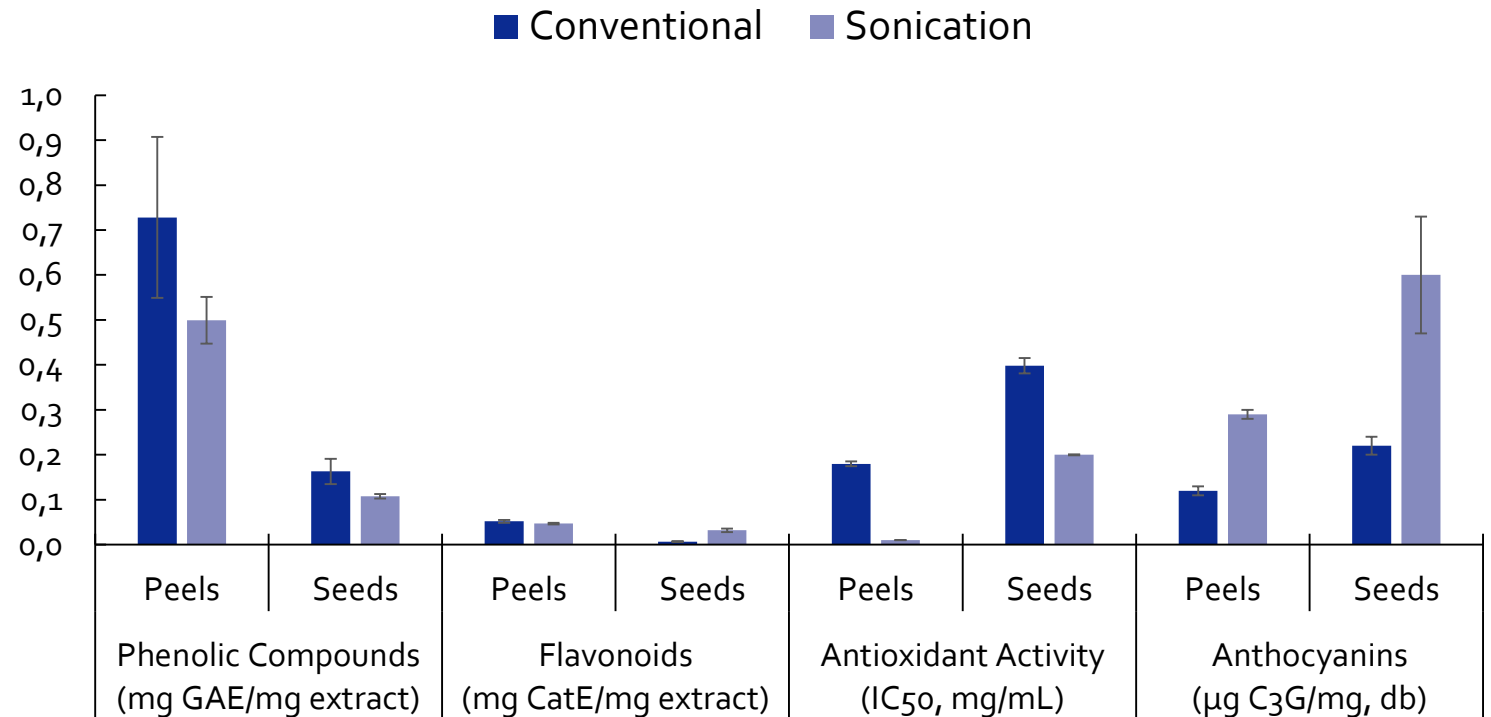
## Characterization

- Bioactive Compounds
  - Total Phenolic Compounds
  - Total Flavonoids
  - Tannins
  - Anthocyanins
- Antioxidant Activity
  - DPPH radical scavenging
- Antimicrobial Activity
  - Inhibition Halos

# Bioactive Compounds



**Conventional ≈ Sonication**



**Conventional ↑**

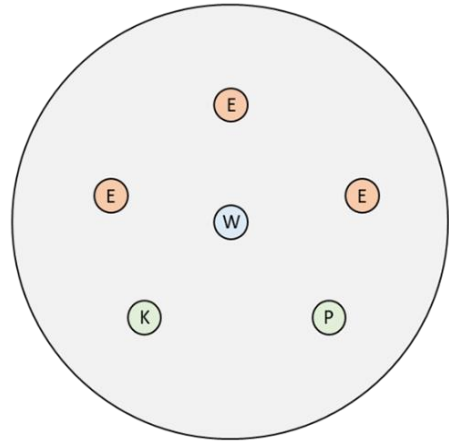
**Sonication ↑**

**Peels ↑**

**Seeds ↑**

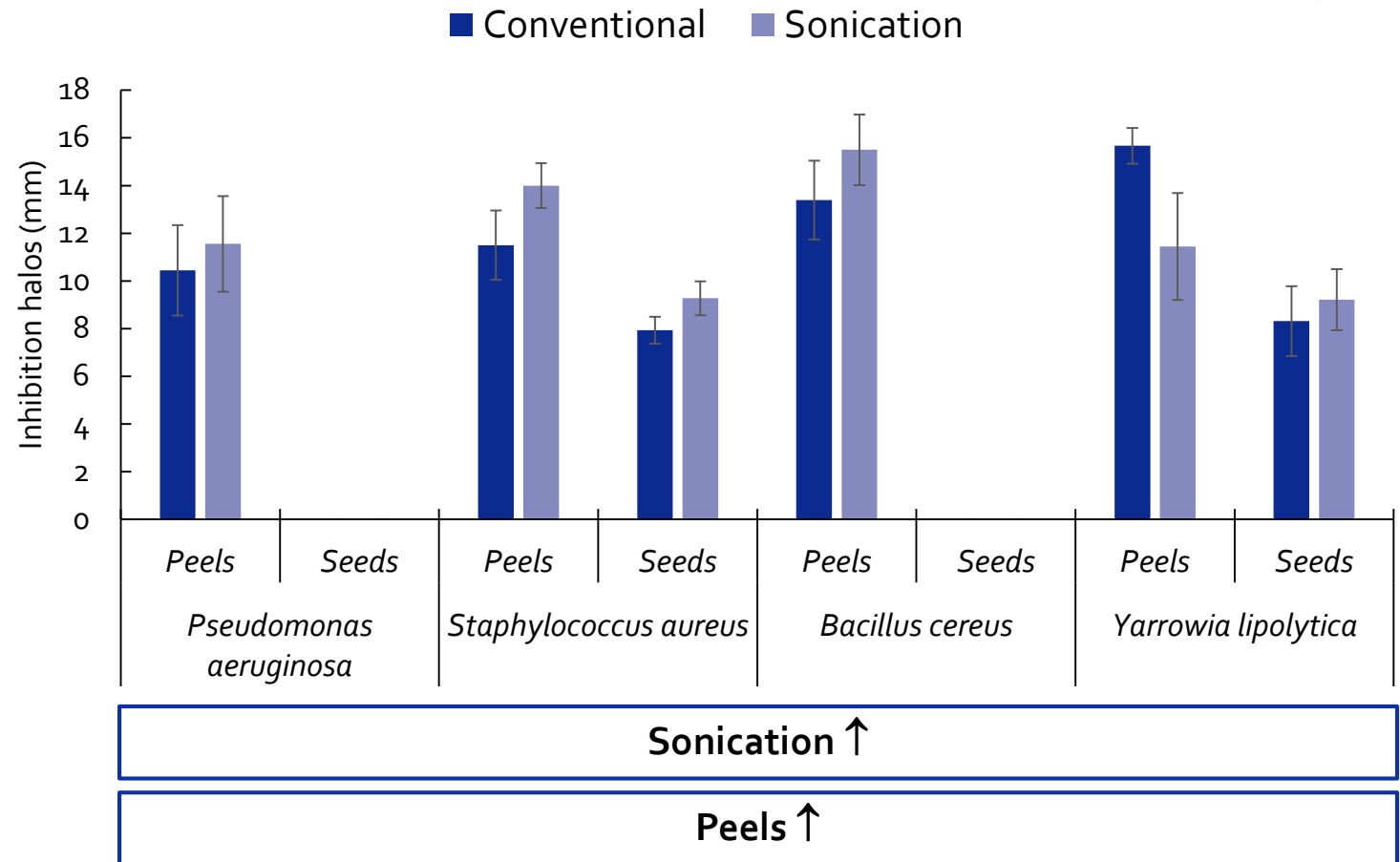
# Antimicrobial activity

(E) extracts (W) water  
(K) kanamycin (P) penicillin



Big Full peel extracts  
(conventional) vs *S. aureus*

*Escherichia coli*



Seeds vs *P. aeruginosa*, *B. cereus*



# Final remarks

Sonication-assisted method is more effective for the extraction of bioactive compounds

Peel extracts provided the best results in terms of bioactive and antimicrobial potentials

The cultivar Big Full showed promising results comparing to other cultivars  
(*e.g.* Acco and Wonderful)

Portugal  
pomegranate  
production

By-products  
potential

National  
industrial  
solutions

Food,  
pharmaceutical,  
agriculture



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