



# APPLICATION OF SUSTAINABLE EXTRACTION AND FORMULATION PRINCIPLES IN DEVELOPMENT OF TOMATO WASTE DERIVED NUTRACEUTICALS EXTRACTOM-APP

Kristina Radić, PhD

Faculty of Pharmacy and Biochemistry, University of Zagreb, Zagreb, Croatia

[kristina.radic@pharma.unizg.hr](mailto:kristina.radic@pharma.unizg.hr)



## About University of Zagreb

.....

Established in

**1669**

Over

**67,300**

students at all levels of study

**31**

faculties and 3 art academies

## About Faculty of Pharmacy and Biochemistry

.....

Established in

**1882**

Over

**1,150**

students at all levels of study

Collaboration with over

**30**

international institutions

# NOURISH

## NUTRITION OPTIMIZATION FOR UNIFYING RESILIENCE, SUSTAINABILITY AND HEALTH

NOURISH is a multidisciplinary research group comprising pharmacists, nutritionists, and molecular biologists at the University of Zagreb's Faculty of Pharmacy and Biochemistry. Our scientific endeavours focus on developing green methods for the extraction and formulation of nutraceuticals, valorising agricultural waste and exploring the interconnections between sustainable nutrition, climate change and health.



### NUTRACEUTICALS AND DIETARY SUPPLEMENTS

[View more](#)



### SUSTAINABLE NUTRITION

[View more](#)



### CLIMATE CHANGE AND HEALTH

[View more](#)

# MEET THE TEAM



EXTRACTOM-APP



DUBRAVKA VITALI  
ČEPO PhD, MPharm  
Group leader



KRISTINA RADIĆ PhD,  
MPharm  
Senior researcher



EMERIK GALIĆ PhD,  
MSc Molecular Biology  
Senior researcher



LOVORKA VUJIĆ PhD,  
MMedBiochem  
Senior researcher



NIKOLINA GOLUB, M  
Food Engineering  
Young researcher



MARINA JURIĆ, MNutr  
Young researcher



TEA PETKOVIĆ, MNutr  
Young researcher



GORDANA BLAŽINIĆ  
Technical associate



EXTRACTOM-APP

# TOMATO PROCESSING WASTE

## PROBLEMS

- Produced in large quantities worldwide
- Challenge for sustainable waste management

## POTENTIAL

- High levels of bioactive compounds
  - Carotenoids
  - Polyphenols
  - Pectin

## SOLUTION

- Sustainable processes for creating innovative nutraceuticals

# MARKET SIZE

## CAROTENOIDS

\$ 9 billion (2031)

Antioxidative and anticancer activities



## POLYPHENOLS

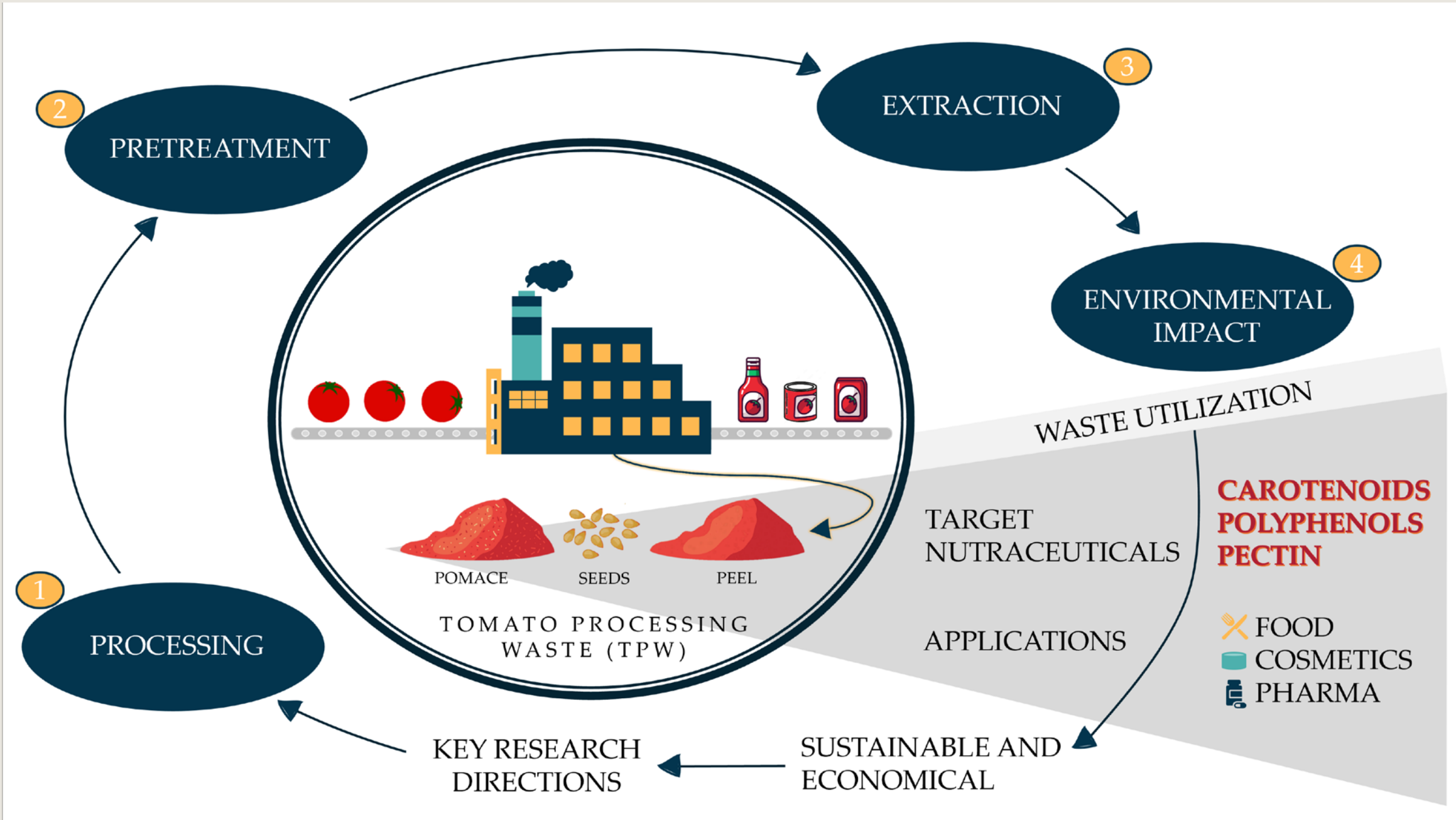
\$ 2.5 billion (2030)

Prevention of metabolic syndrome, obesity, cardiovascular diseases, type 2 diabetes, and cancer

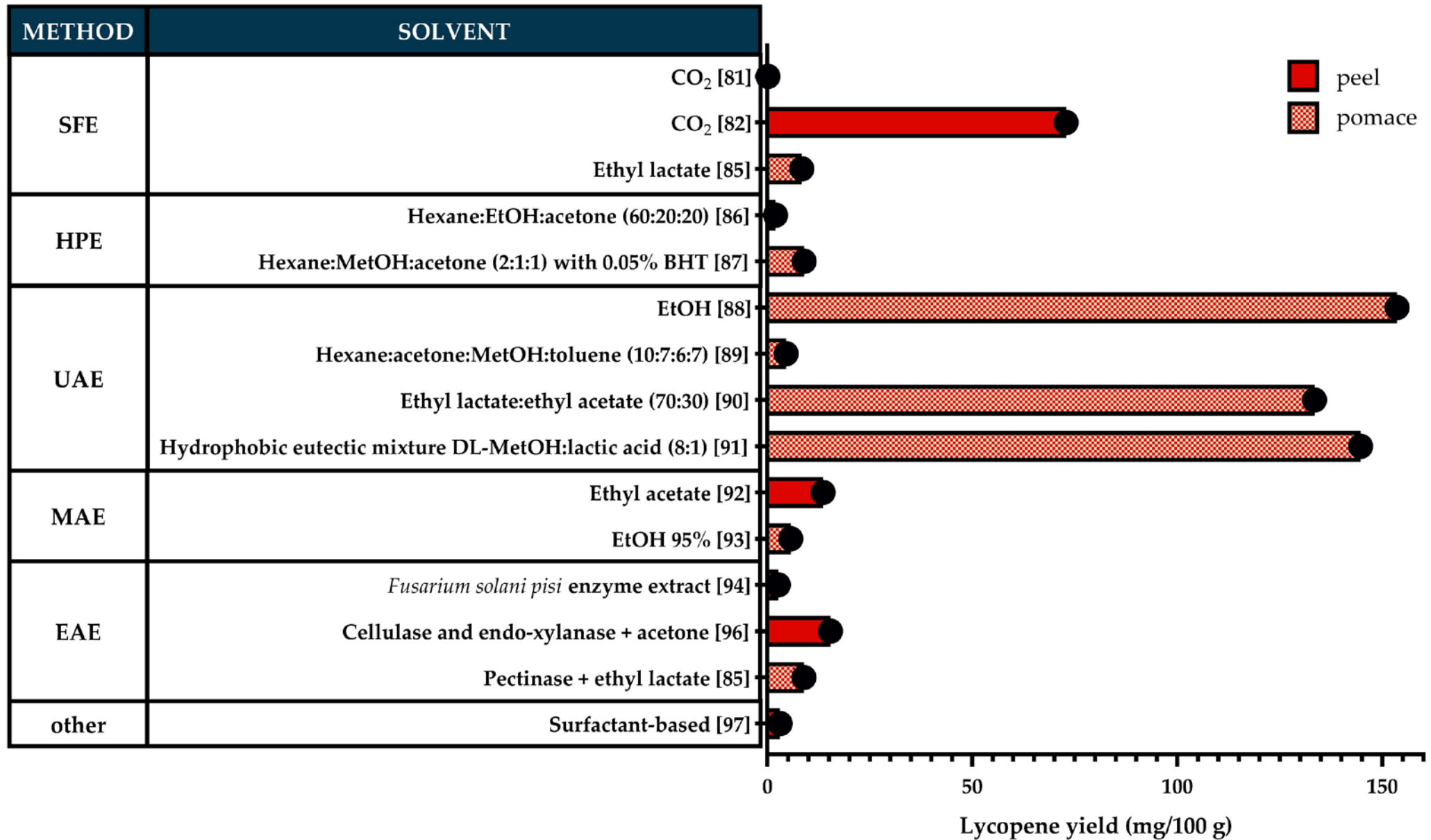
## PECTIN

\$ 1.8 billion (2026)

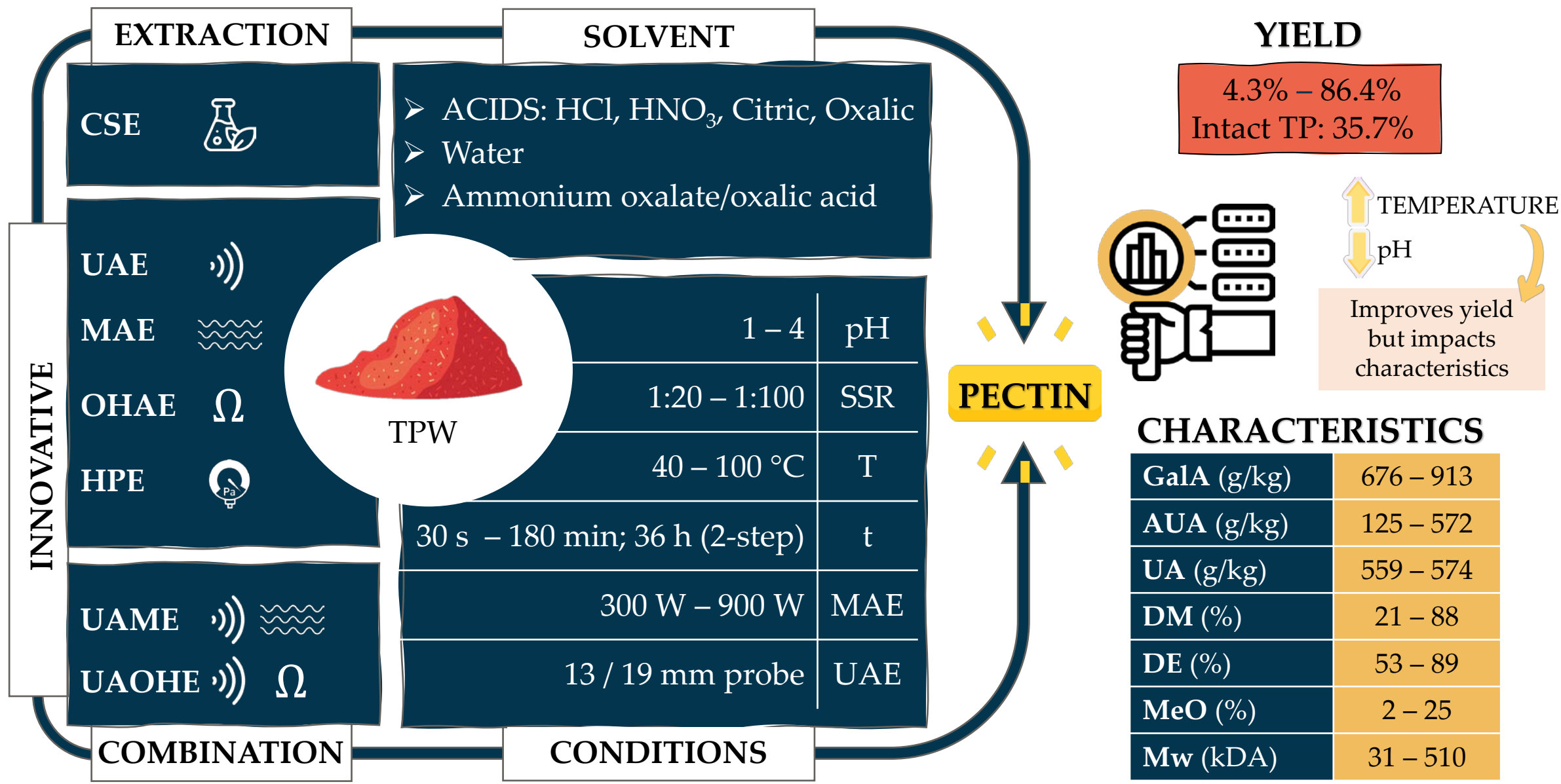
- gelling, stabilizing, emulsifying and thickening agent
- therapeutic for certain conditions like diarrhea or throat and mouth soreness

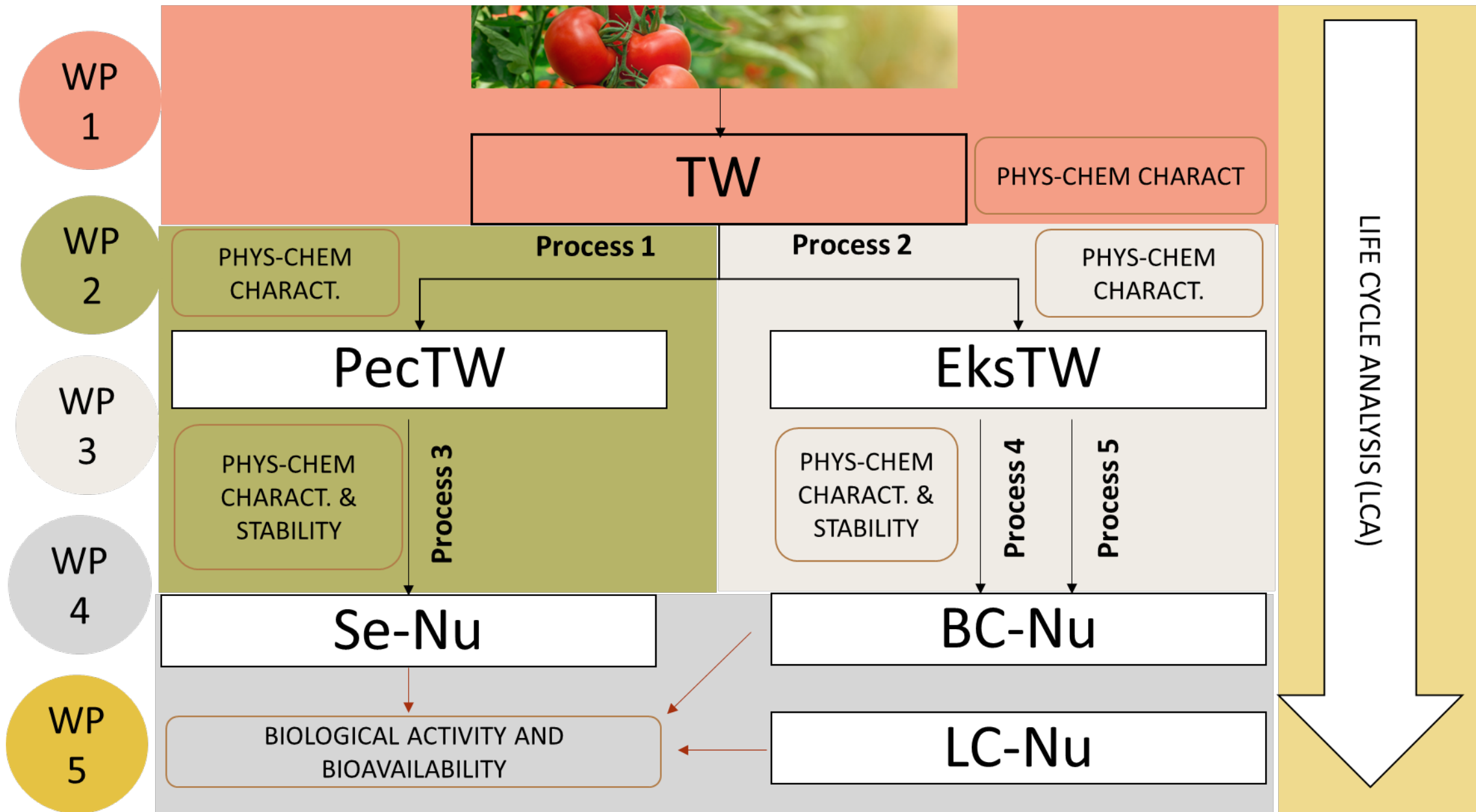


## LYCOPENE EXTRACTION









# EXTRACTOM-APP



new knowledge about combined MCE/MAE in green extraction



potential and limitations of green formulation approaches



implementation of LCA in the field of nutraceuticals



EXTRACTOM-APP

# THANK YOU

Kristina Radić, PhD

<https://nourish.pharma.hr/>

e-mail: [nourish@pharma.hr](mailto:nourish@pharma.hr)



EXTRACTOM-APP



HRZZ  
Hrvatska zaklada  
za znanost



NOURISH

FBF



*This work was supported by the Croatian Science Foundation under the project number **HRZZ-IP-2022-10-1234***