

# Effect of technological interventions on the development of functional foods by using ingredients from vegetable bio-resources

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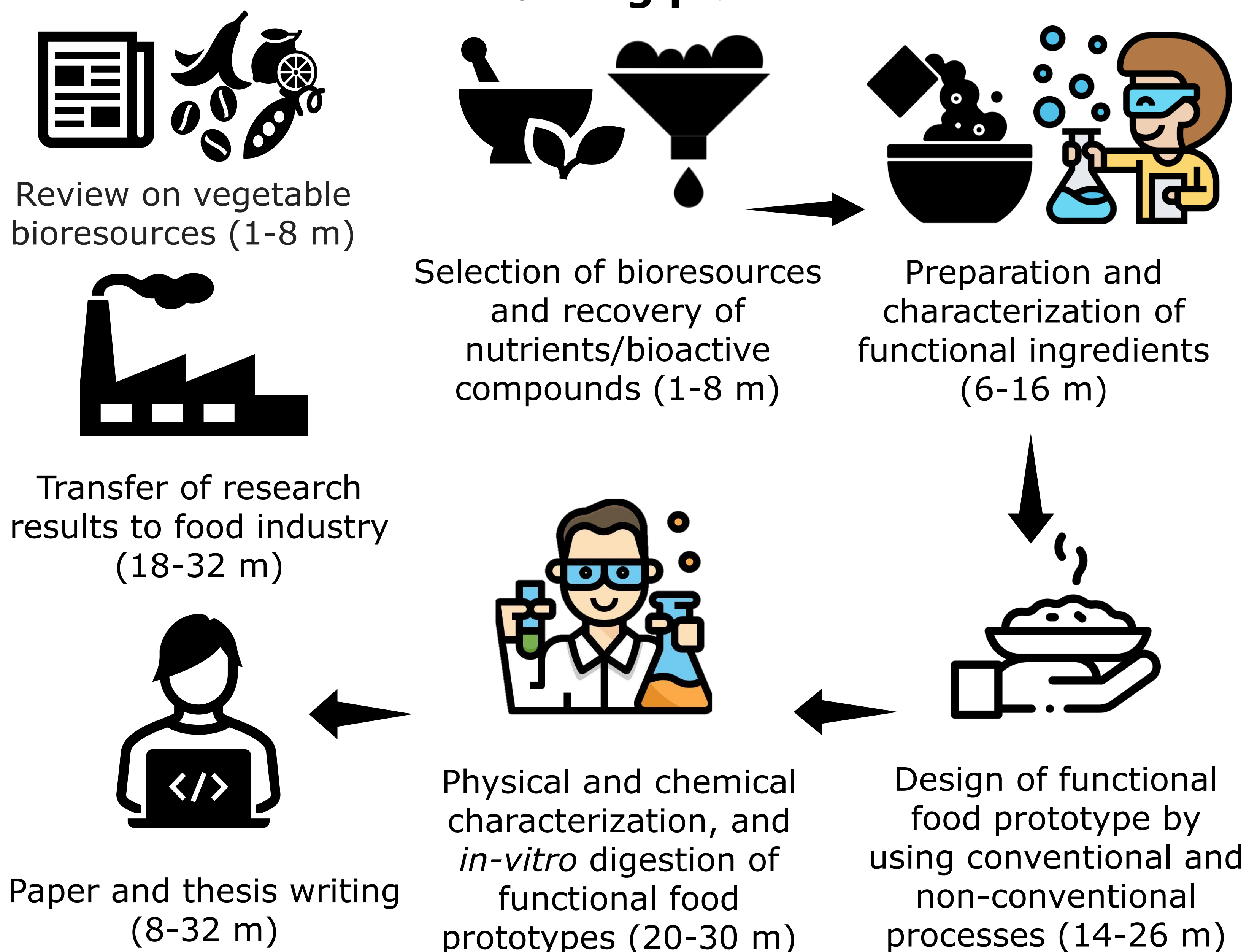
## Aim

To study the effect of processing on the development of functional foods by using nutrients or bioactive compounds-containing ingredients from vegetal origin

## Background

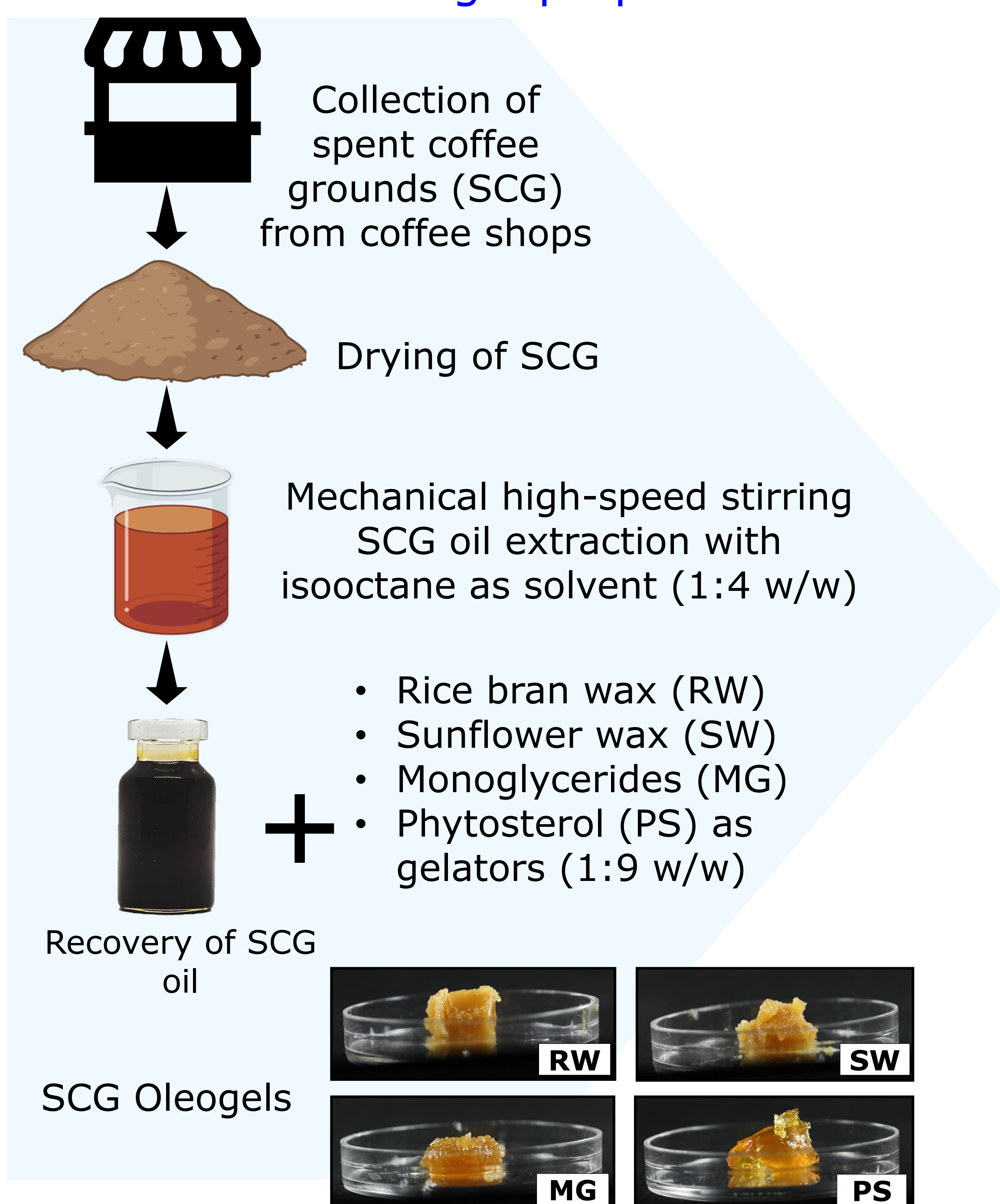
Tragically, 38% of food waste is produced from food industries, agriculture, and fishery sectors annually [1]. Most of these wastes are used for animal feeding, energy production or landfilling [2]. However, most of these wastes may be considered as bio-resources, because they contain macronutrients, such as protein, dietary fibre, and fats, as well as interesting biologically active compounds including polyphenols, terpenoids, flavonoids, among others [3]. These compounds have shown bioactivities such as antioxidant, antimicrobial, anti-inflammatory, and antidiabetic properties that still need to be explored and would be useful for a wide range of applications that are economically and industrially important [4].

## Working plan



## Study case: Spent coffee grounds oil-based functional ingredients

### Step 1: Extraction of oil from SCG and SCG oleogel preparation



### Step 2: SCG oleogels characterization

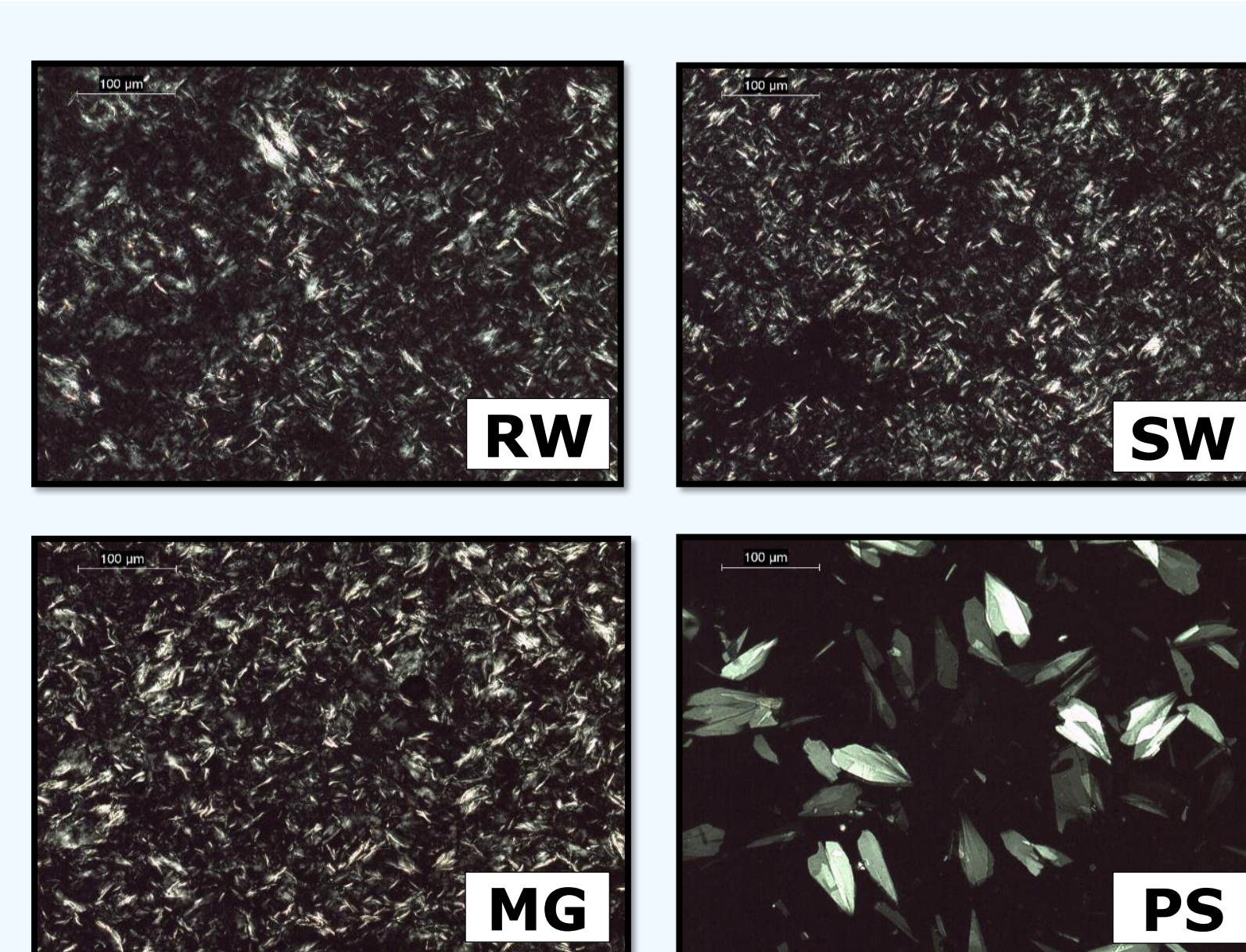


Fig1. Polarized light microscopic images of SCG oleogels

- RW, SW, MG oleogels showed needle like crystals with different size
- PS oleogel showed "broken glass like" crystals

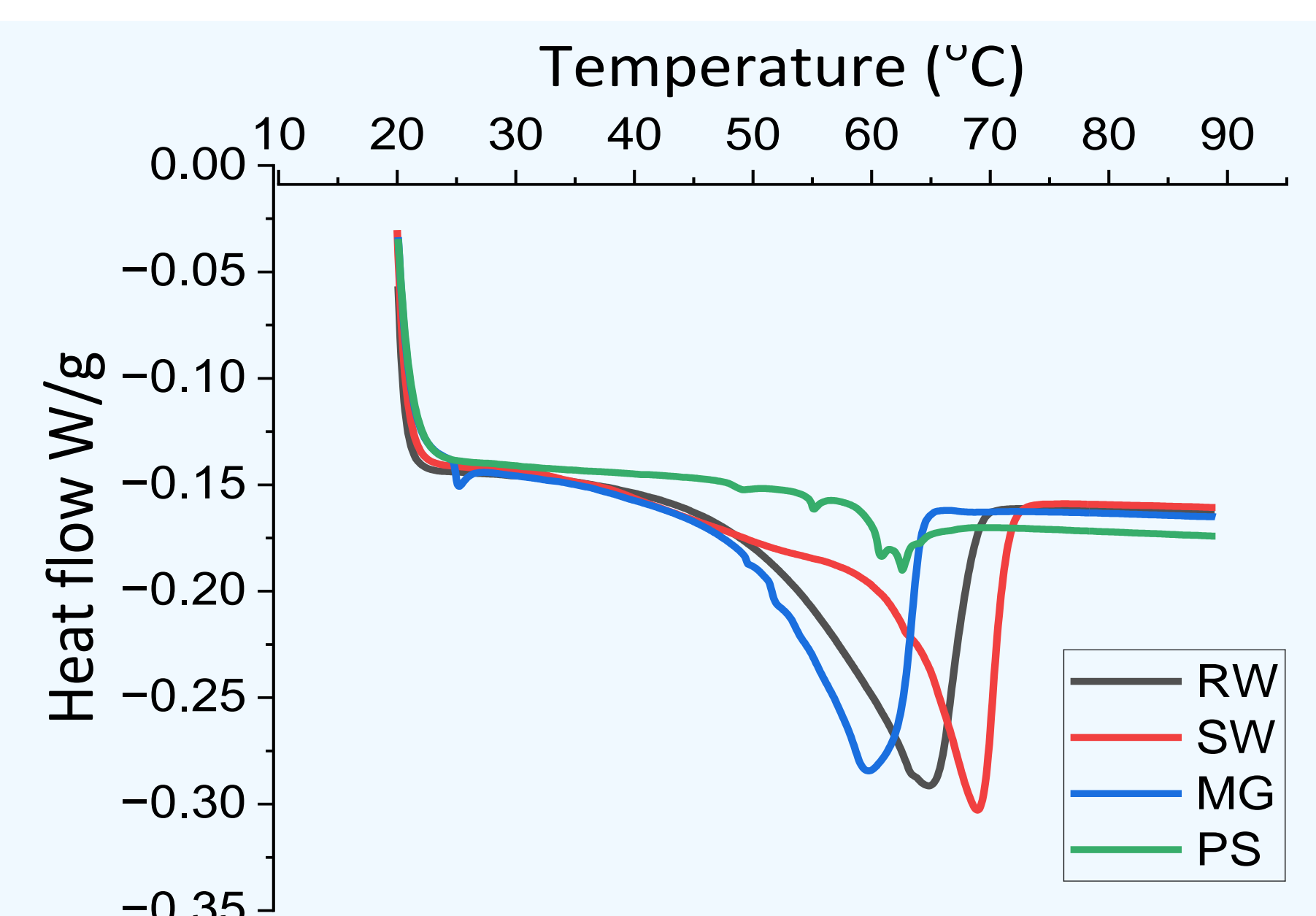


Fig2. Melting temperature of SCG oleogels

- MG oleogel required less temperature to melt followed by PS, RW, SW ones
- PS oleogel showed different melting peaks, due to the presence of different crystalline structures

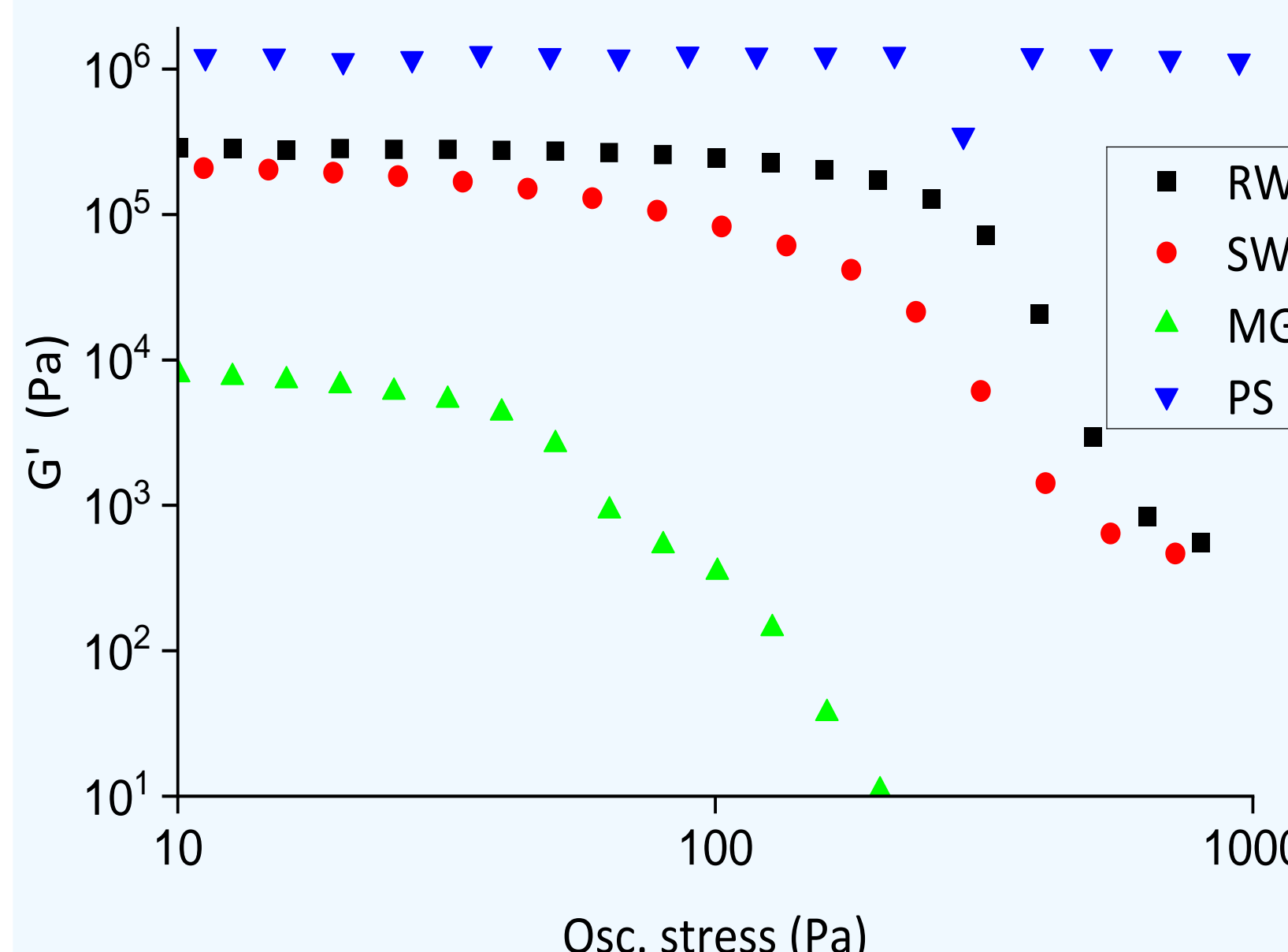


Fig3. Rheological properties (stress sweep) of SCG oleogels

- PS gelator formed the strongest oleogel followed by RW, SW, MG ones
- MG oleogel was the softest among others

## Conclusions

- Spent coffee grounds (SCG) can be a good source for oil extraction
- SCG oil can form gels with RW, SW, MG, and PS gelators

## References

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