FROM BYPRODUCTS TO BIOPRODUCTS

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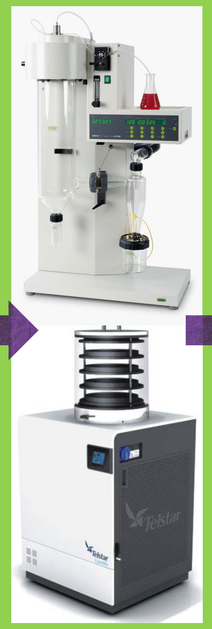
INTRODUCTION

Food lifecycle creates enormous amounts of processing **byproducts** and waste that can be used for production of valuable bioactives and potential food additives. Researchers and experts from food industry are very interested in developing of innovative functional foods and **bioproducts** in accordance with circular economy and *low* or *zero waste* concept. For instance, food with encapsulates containing bioactives from grape processing byproducts, as active component could be one of directions since these bioactives still posses health-promoting effects, colour, flavour and can be stabilized by various encapsulation technologies.

RESULTS

EXTRACTION
of bioactives
from grapeskin



ENCAPSULATION TECHNIQUES

MICROENCAPSULATES

FOOD SYSTEMS

DISCUSSION

All microencapsulates showed extremely **low water activity (0.2-0.3),** and **very high solubility (around 90% m/m)**.

Microencapsulation yields varied from around **65 to 93%.**

Total phenol contents ranged from **5.8 to 11.6 mg GAE/g** and was the highest in microencapsulates produced by freeze drying with gum Arabic.

The results of the assessment of sensorial characteristics showed very high average sensory scores, **over 7 and 8.** Sensorial analysis indicated that the highest potential for the application in food products have shown microencapsulates based on maltodextrin.

MATERIALS & METHODS

- The raw material for the extraction of bioactives - **grapeskin** (GS) of red grape variety as byproduct of vinification.
- Microencapsulates carriers – **maltodextrin** (MD), **gum Arabic** (GA) and **skimmed milk powder** (SMP).
- Encapsulation techniques - **spray** and **freeze drying**.
- Final products **- Oat meals** (OM) and **yoghurts** (Y) enriched with microencapsulates

CONCLUSIONS

These results have shown that spray dried and freeze dried microencapsulates of grapeskin as byproducts of agri-food processing could be used as a source of natural pigments and bioactives with improved stability.

Microencapsulates obtained in this research can be applied as multipurpose additives in dairy, confectionery, bakery products as well as beverages and soft drinks.

Namely, except their bioactive potentials, these microencapsulates could be a substitute for artificial colourants present in the numerous food products.

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