

FUNBREW– Biotransformation of brewers' spent grain:

increased functionality for novel food applications



Summary

With more than 30 million tons annually produced worldwide, brewers' spent grain (BSG) accounts for 85% of the total by-products generated by the beer industry. BSG has a very good nutritional quality but up to date, its main destination is as animal feed. The project goal is to transform BSG into a valuable ingredient for the food industry. Bioprocessing (controlled fermentation and enzymatic treatment) is a feasible technology to improve BSG technological quality. The target are cereal-based food (baked goods, pasta and breakfast cereals) widely consumed every day in our diets.

Main objective

BSG is rich in nutrients but does not have a good performance when used in food as such. Funbrew mission is to study feasible bioprocessing options to enable the use of BSG as food ingredient with improved technological and nutritional attributes.

Results

Fermentation with selected lactic acid bacteria and the use of xylanase altered BSG structure and positively modified the:

- rheological properties (synthesis of dextran);
- nutritional/functional properties (increase of the antioxidant activities);
- overall safety and reproducibility.

Potential impact

Selected processing conditions allowed to increase BSG nutritional and technological functionality, enabling its use as ingredient in food production. With simple processing steps, technological and sensory problems related to BSG characteristics could be overcome, adding value to BSG. As consequence, food products like bread pasta or breakfast cereal enriched in bioprocessed BSG, will allow the consumer an higher intake of fiber, antioxidants and other beneficial compounds. Through BSG valorization, the potential of breweries side-streams could be maximized, enabling the development of more sustainable food systems.

The Funbrew project:

