

VTT's Research on cereal technologies

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VTT has long experience in developing fractionation, fermentation and enzymatic technologies for cereal industry. We have tools to tailored sensory and nutritional quality of cereal products in different applications. Main focus is on delivering dietary fibre and whole grain in a consumer appealing format in beverages, snacks and bakery products. We have specialised in value added rye, oat, wheat and barley products and processes.

1. Functional ingredients

- ✚ Milling and fractionation of specific cereal fractions
- ✚ Fermented and enzyme treated cereal fibres
- ✚ Use of ingredients in beverages, snack and bakery products

2. Enzymatic processing

- ✚ Discovery, production and characterization of novel enzymes
- ✚ Applying enzymes in cereal processing
 - Improving technological functionality of cereal fractions and sensory quality of end-products
 - Liberation of bioactive compounds
 - Utilization of enzymes in fractionation and fermentation processes

3. Cereal fermentations

- ✚ Tailored fermentation technologies for improved structure and nutritional value
- ✚ Control of grain-microbial interactions for improved safety and functionality
- ✚ Optimization of fermentation process for desired targets
- ✚ Microbial population dynamics in cereal-based bioprocesses

4. Baking technologies

- ✚ High fibre/ wholegrain baking
- ✚ Non-wheat baking
- ✚ Frozen dough technology
- ✚ Sourdough baking

5. Malting, brewing and beverage processing

- ✚ Malting process monitoring and control
- ✚ Technologies to restrict the growth of harmful microbes in malting
 - Producers of gushing factors, PYF-factors and toxins
- ✚ Managing microbes in the Barley-to-Beer Chain
- ✚ Advanced brewing yeast strain improvement
 - Classical and targeted mutagenesis
 - Metabolic engineering
 - Management of yeast responses to high ethanol and osmotic stress
- ✚ Non-alcoholic functional beverage