

Downstream processing

Getting your ingredient out of the process

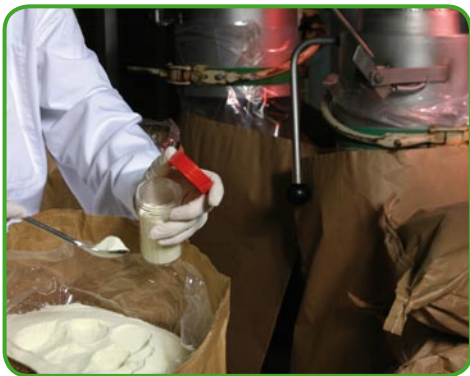
Ingredients that are produced in hydrolysis, fermentation or reaction processes usually need downstream processing (DSP) before they can be formulated, packaged and delivered to customers. NIZO can assist you with transformation, separation, purification and formulation of your high value ingredients based on our more than 60 years experience in this area. In addition, DSP techniques can be applied to recover high value components from waste streams and used as ingredients for feed, food or cosmetic industry.



What we offer

Development of cost effective DSP routes including process and product requirements.

- Valorisation of all process streams: minimising waste
- From laboratory to production scale speeding up new ingredient development.
- Shorter time to market: process development in parallel with the production of food grade test material for testing.
- All without interfering with production regimes at your company.
- Experts from NIZO ensure a smooth implementation and trouble shooting at your production site.



Track record:

- Proteins (lactoferrin)
- Peptides (lactoferricine)
- Amino acids (tryptophan)
- Polysaccharides (inulin)
- Oligosaccharides
- Polyphenols
- Isoflavones
- Enzymes (phytase)
- Vitamines

Ingredient recovery & purification

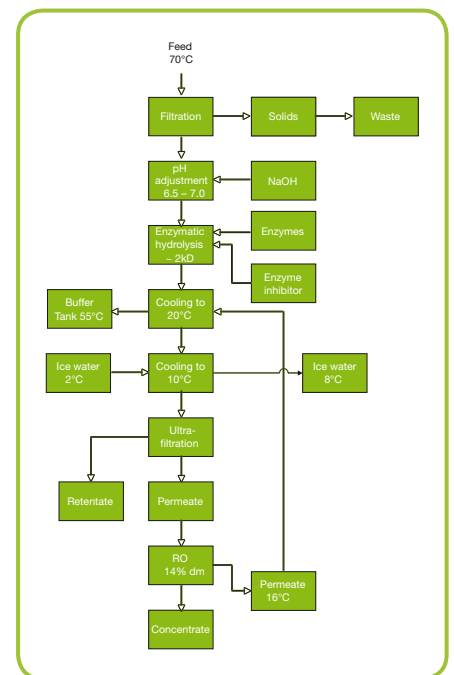
NIZO has developed and implemented various processes to recover and purify enzymes and flavour components from fermentation broths.

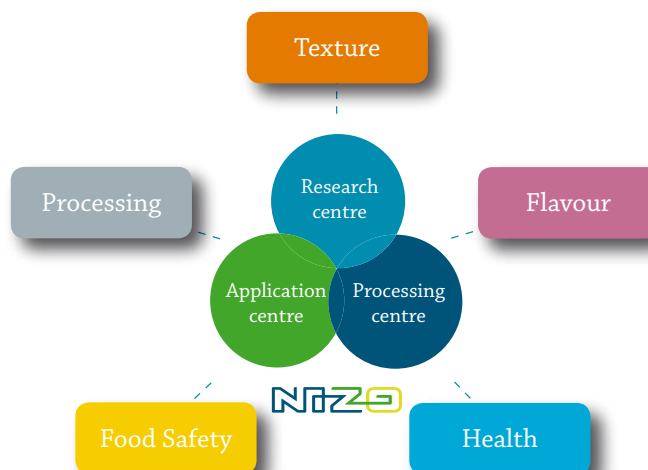
A typical processing route includes:

- desludging with centrifuge or micro filtration to remove insoluble particles
- Chromatography
- Ultra filtration for concentration and formulation
- Evaporation and spray drying

Valorisation of waste streams

There is more value in waste than often realized. NIZO can identify, recover and purify valuable components from your waste streams. A good example is whey, formerly a waste material during cheese manufacturing. Whey contains various high value components that after transformation and/or purification have nutritional, health, texture or other benefits.





Process & product design

Building new production lines or overhauling existing ones generate a lot of new process options. NIZO has experience in developing process flow sheets and evaluating alternatives based on process economics and product requirements.

This can be assisted by the use of predictive models, developed by NIZO.



Technologies

Filtration (ME, UF, NE, RO)

- Chromatography
- Decanters and Centrifuges
- Ultra High Temperature (UHT)
- Evaporators
- Spray driers

Chromatography

Increasing demand for speciality ingredients and decreasing processing costs make chromatography an accepted technology in DSP of ingredient processing. In addition to conventional packed bed chromatography NIZO has access to filter chromatography, radial flow chromatography and expanded bed chromatography.

Filtration

Dead end filtration, ultra filtration, dia filtration, cross flow filtration are common unit operations at NIZO. Membranes from various brands are available for testing, evaluation and production. Offers from equipment manufacturers are evaluated based on our experience.

The large scale UF and MF installations in the food grade Processing Centre are often used as production unit for customer projects.

About NIZO food research

NIZO food research is an independent and one of the most advanced research centres in Europe. We provide industry with solutions they require by developing and applying technologies for innovations in the areas of flavour, texture, health, food safety and process optimisation. The food-grade industrial pilot plant is used for development and testing at industrial level and is available for test productions. The NIZO application centre provides industry with facilities for product development & product oriented research.

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