



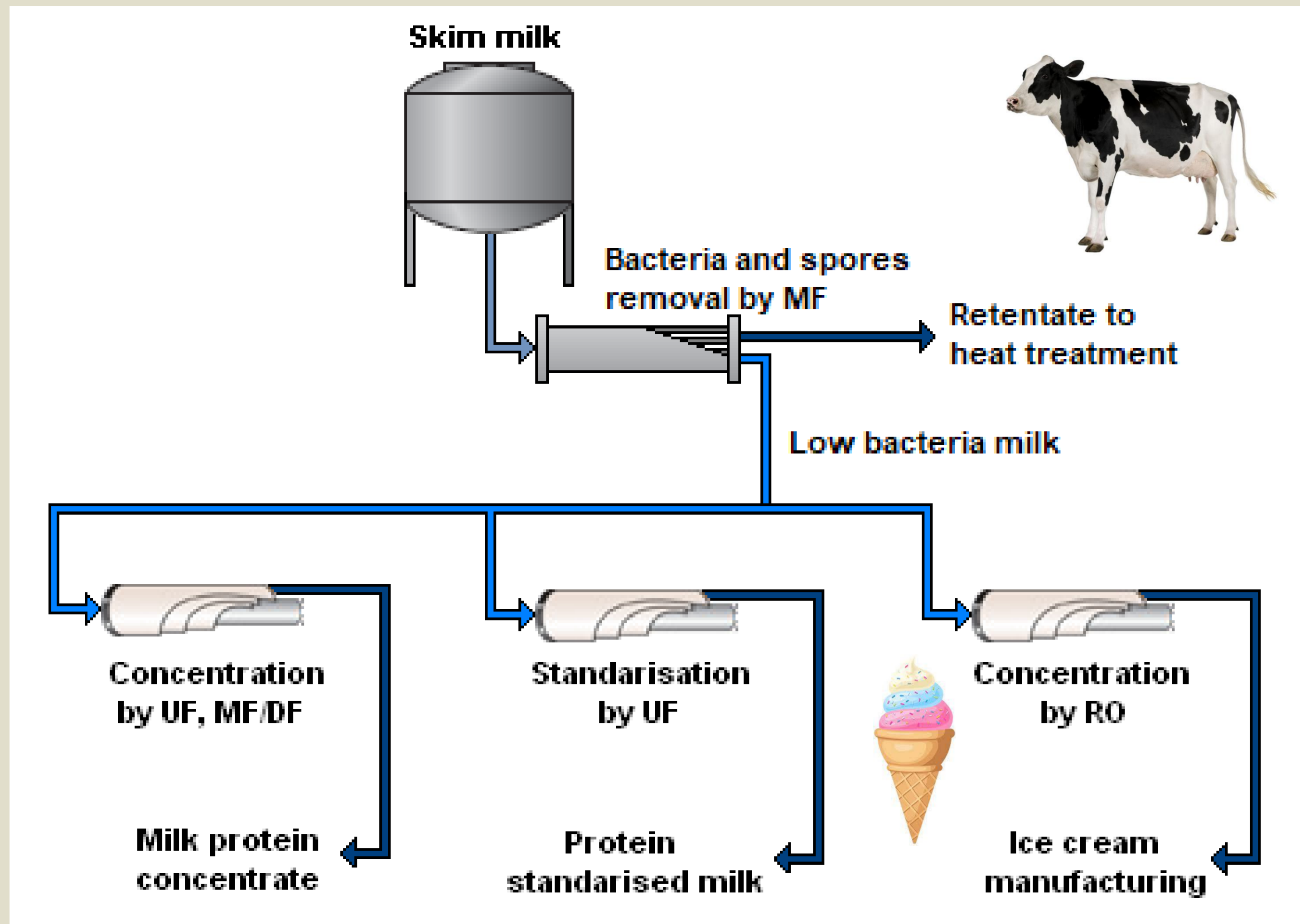
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# Advancing Food By-Product Valorization: Membrane Technologies for Sustainable Protein Recovery

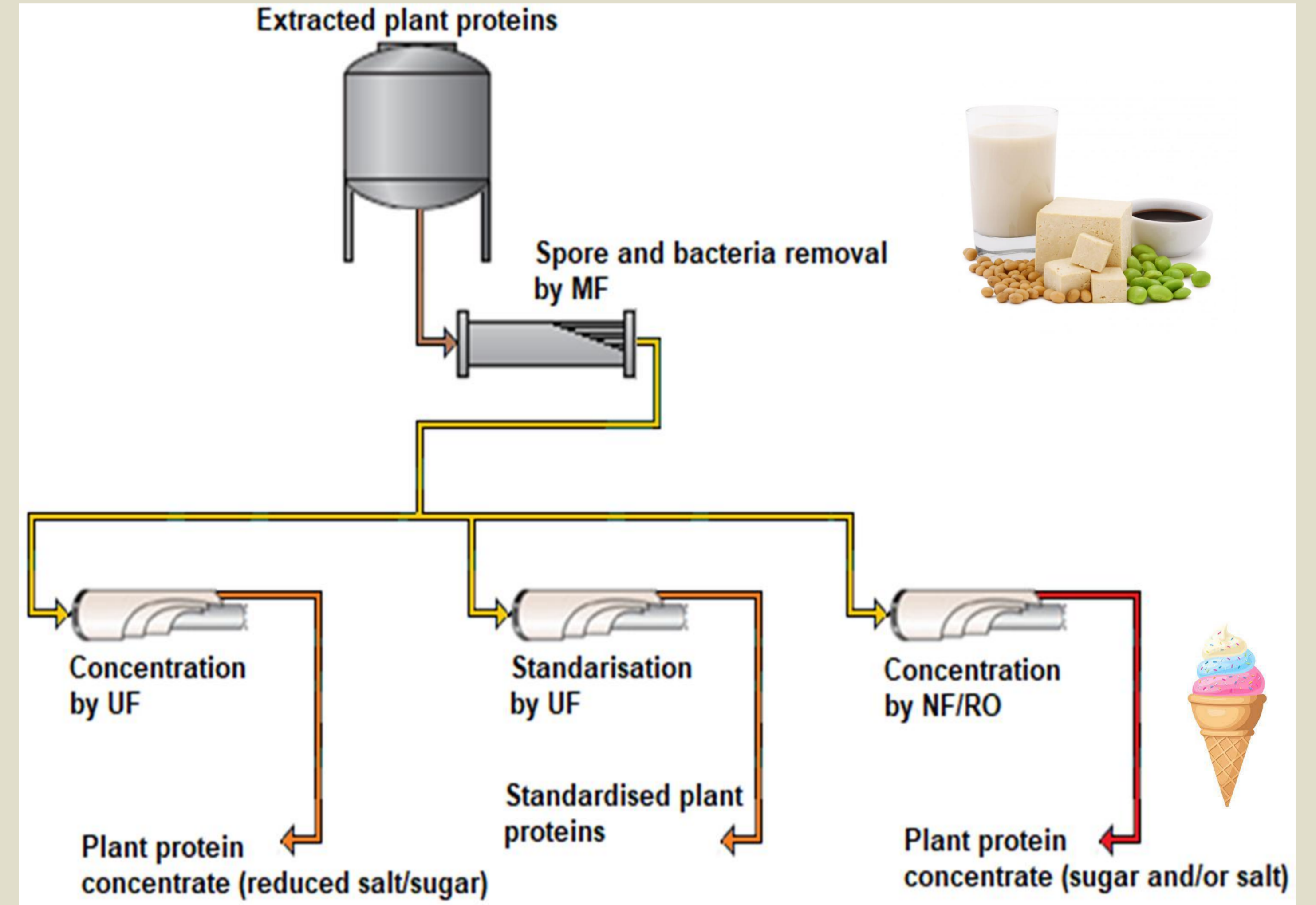
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## Animal protein processing

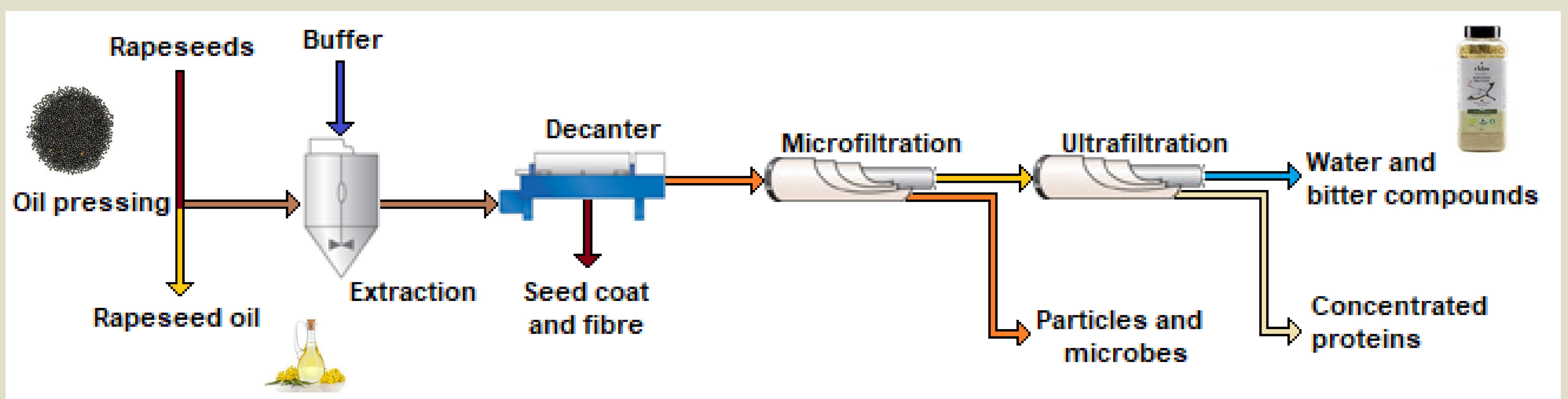


## Plant protein processing



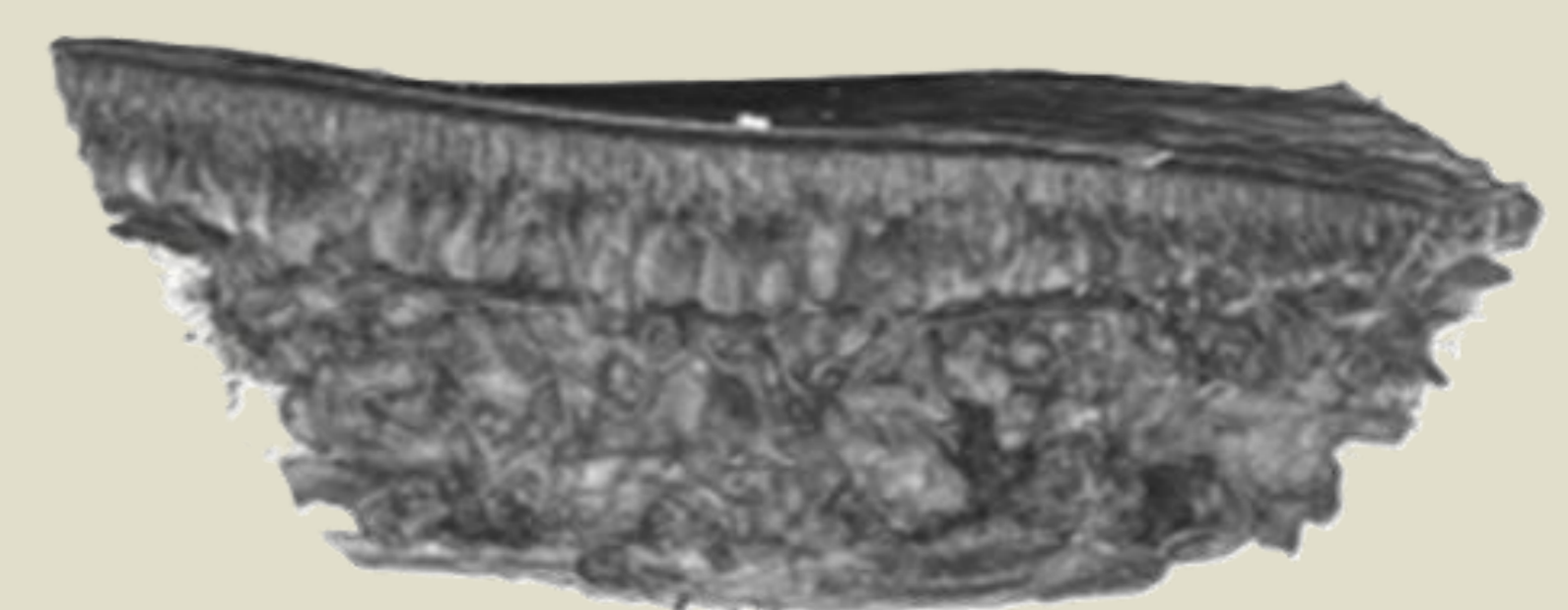
## Rapeseed protein processing

- Rapeseed is the world's second largest cultivated oilseed.
- The primary product is vegetable oil (40 wt.%) and the remain is the protein-rich press cake.
- 3 kg of rapeseeds generate 1 kg oil and 2 kg press cake.
- Rapeseed protein is comparable with soy protein in nutritional value and contains more S-amino acids than many other plant proteins.
- The European Food and Safety Authority approved rapeseed protein isolated for human consumption in 2013.



## Status and Challenges

- Research focused on optimizing membrane processes for rapeseed protein extraction from press cake in Southern Sweden.
- Microfiltration was used to remove fine particles, fat, and microbes.
- Ultrafiltration was applied for protein concentration and purification.
- Membrane fouling and cleaning were studied using X-ray tomography
- Highlights the potential of membrane technology for valorizing animal and plant-based food by-products.
- Contributes to sustainability in the food industry by improving resource efficiency.



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Membrane  
Group

