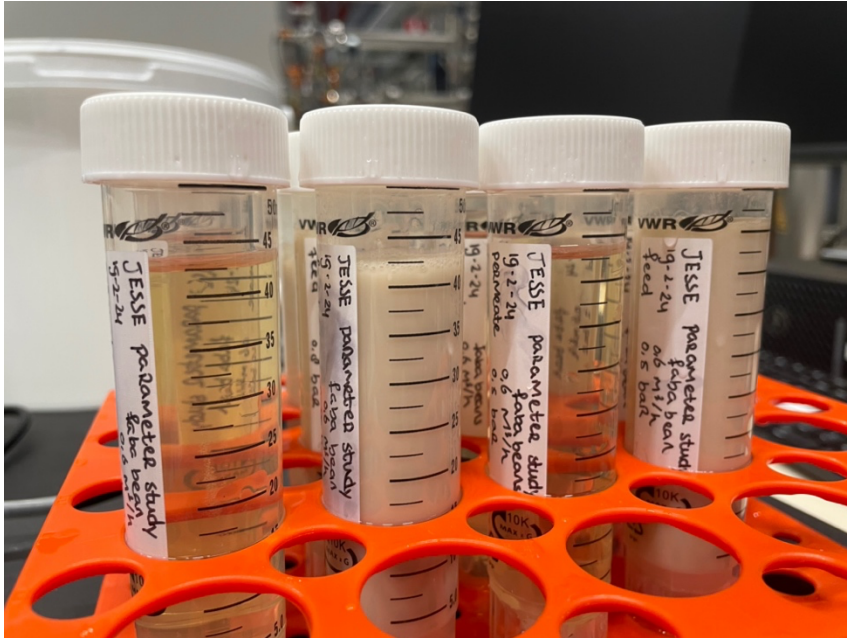


# Appendix A: Membrane filtration

## A.1 Samples during parameter study



## A.2 The permeate is removed and the retentate is continuously recirculated back into the feed tank during the concentration study



### A.3 Calculations of the crossflow velocity (CFV)

The membrane consists of three leafs. The channels have a width of 3.8 inches = 0.965 meters. The spacer is 48 mil = 0.048 inches =  $1.2192 \times 10^{-3}$  meters and takes up 20 % of the channel area. This gives a cross-sectional area of  $2.824 \times 10^{-3} \text{ m}^2$ .

$$\text{Cross sectional area} = 3 \times 0.9652 \times (1.2192 \times 10^{-3} \times 0.8) = 2.824 \times 10^{-3} \text{ m}^2$$

A = the cross-sectional area ( $\text{m}^2$ )

Q = volumetric flow rate ( $\text{m}^3/\text{h}$ )

CFV = crossflow velocity ( $\text{m/s}$ )

$$Q = 1.2 \text{ m}^3/\text{h}$$

$$A = 2.824 \times 10^{-3} \text{ m}^2$$

$$CFV = \frac{Q}{A} = \frac{1.2}{2.824 \times 10^{-3}} = 424.89 \text{ m/h} = 0.12 \text{ m/s}$$

**Table 1.** Calculated CFV from the corresponding volumetric flow rates.

Volumetric flow rate ( $\text{m}^3/\text{h}$ )	Crossflow velocity ( $\text{m/s}$ )
2.0	0.20
1.8	0.18
1.7	0.17
1.2	0.12
0.9	0.09
0.6	0.06

## Appendix B: Formulation process

### B.1 The nutritional composition of the commercially available cooking creams

**Table 2.** *The nutritional composition of the commercially available cooking creams .*

	Nutrition values (per 100 ml)		Fat (g)	Carbohydrates (g)		Fiber (g)	Protein (g)	Salt (g)		
	Energy (kJ)	Energy (kcal)		Saturated fat (g)	Unsaturated fat (g)					
<b>Dairy cooking cream</b>										
Ica Matlagnings Grädde [1]	600	150	13	8.3	4.7	4.3	4.3	3.1	0.1	
Skånemejerier Matlagnings Grädde [2]	600	150	13	8.3	4.7	4.3	4.3	3.1	0.1	
Ica Mellan Grädde [3]	1100	270	27	17	10	3.6	3.6	2.8	0.1	
Skånemejerier Mellan Grädde [4]	1100	260	27	17	10	3.6	3.6	2.8	0.1	
<b>Vegan cooking cream</b>										
Oatly (iMat Ruokaan) [5]	600	150	13	1.6	11.4	5.8	3.6	0.8	0.9	0.11
Alpro cooking (soy) [6]	587	142	14	1.6	12.4	1.2	1.2	0.6	2.0	0.14
Planti (oats) [7]	686	166	15	1.3	13.7	6.3	5	1	0.21	
Farmers and Chefs oats (oats) [8]	719	172	16	1.6	14.4	6.4	4.2	0.6	0.5	0.20
Oatly (iMat Visp Ruokaan) [9]	1045	253	23	22	1	11	2.3	0.5	<0.5	0.21

## B.2 The ingredients of the commercially available vegan cooking creams

**Table 3.** *The ingredients of the commercially available vegan cooking creams.*

<b>Ingredients of the vegan cooking creams</b>	<b>Oatly [5] (13%)</b>	<b>Alpro [6] (14%)</b>	<b>Planti [7] (15%)</b>	<b>Farmers and Chefs [8] (16%)</b>	<b>Oatly [9] (23%)</b>
Water	1	1	1	1	1
Oats	1	0	1	1	1
Soya beans	0	1	0	0	0
Rapeseed oil	1	0	1	1	1
Coconut oil	0	0	0	0	1
Sunflower oil	0	1	0	0	0
Maltodextrin	0	0	0	0	1
E435 (emulsifier)	0	0	0	0	1
E472e (emulsifier)	1	0	1	0	1
Emulsifier (Sucrose esters of fatty acids)	0	1	0	0	0
Citric acid (E330; acidity regulator agent)	0	0	1	0	0
Sodium citrate (E331; acidity regulator agent)	0	0	1	0	1
Gellan gum (E418; stabilizer)	0	0	0	0	1
HPMC - Hydroxypropyl Methyl Cellulose (E464; stabilizer, thickener)	0	0	0	0	1
xanthan gum (E415; stabilizer, thickener)	1	1	1	0	0
Carrageenan (E407, stabilizer)	0	1	0	0	0
Guar gum (E412, stabilizer)	0	1	0	0	0
Linseed fiber	0		0	1	0
Sugar	0	1	0	0	0
Salt	1	1	0	1	1
Flavourings	0	1	0	0	0
Beta-carotene (color)	0	0	0	0	1
<b>Total ingredients</b>	<b>6</b>	<b>10</b>	<b>7</b>	<b>5</b>	<b>12</b>

B.3 Stability of the emulsions



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