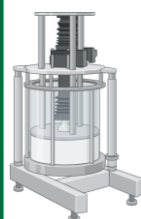


Introduction

Project Background

Chromatography is a unit operation frequently used for the purification of API in the pharmaceutical industry due to high separation efficiency.

DRAWBACKS

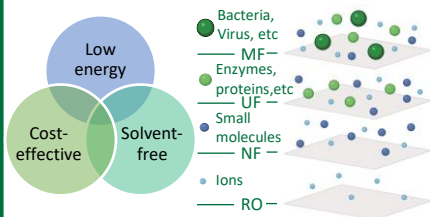


Large amounts of solvents

Solvent waste disposal

Energy intensive process

Membrane technology – A sustainable alternative



Project Scope and Aims

- Evaluate the **enzyme and solvent removal** efficiency.
- Explore the effect of **different feed compositions**.
- Assess the **techno-economical aspect** of HPLC replacement with membrane technology

Methodology

Membrane materials tested:

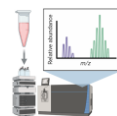
- Polyethersulfone
- Regenerated cellulose

UHPLC

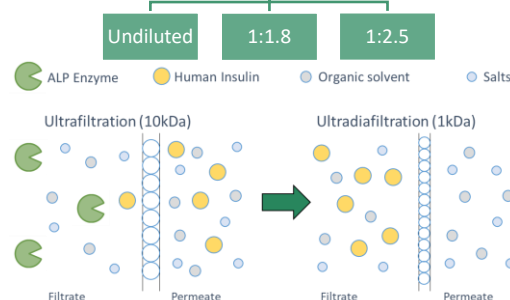
- Insulin identification
- Enzyme identification

Western Blot

- Enzyme and enzyme fragments identification



Feed compositions



Filtration recovery

$$R\% = \frac{V_p}{V_f} * 100$$

Permeate flux

$$J = \frac{V}{A * t}$$

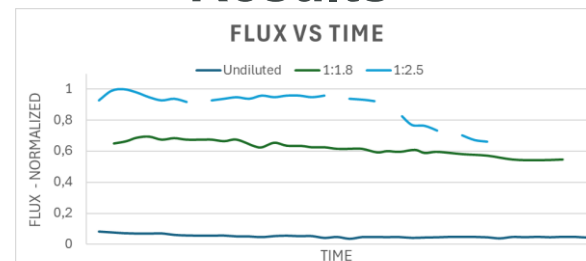
Solute rejection

$$R = 1 - \frac{C_p}{C_f} * 100$$

Number of dilutions

$$N = \frac{V_d}{V_f}$$

Results



	Undiluted	1:1.8	1:2.5
Filtration recovery (%)	40	50	80
Flux (Norm.)	0,034	0,628	0,894
Enzyme rejection (%)	99,22	90,36	94,18
Insulin rejection (Norm.)	1	0,701	0,702
Number of diafiltrations	More than 4,5	4,5	3,5

Perspectives

Future research:

- Testing of different types of membranes and membrane pore sizes.
- Testing with different operating conditions, such as higher pressure.

Being a Helix lab fellow:

- ✓ Enhanced my **scientific knowledge** through project sharings, Tech talks, site visits, etc
- ✓ Broaden my **network** with students and taught me how to combine project work with **fun** activities.