

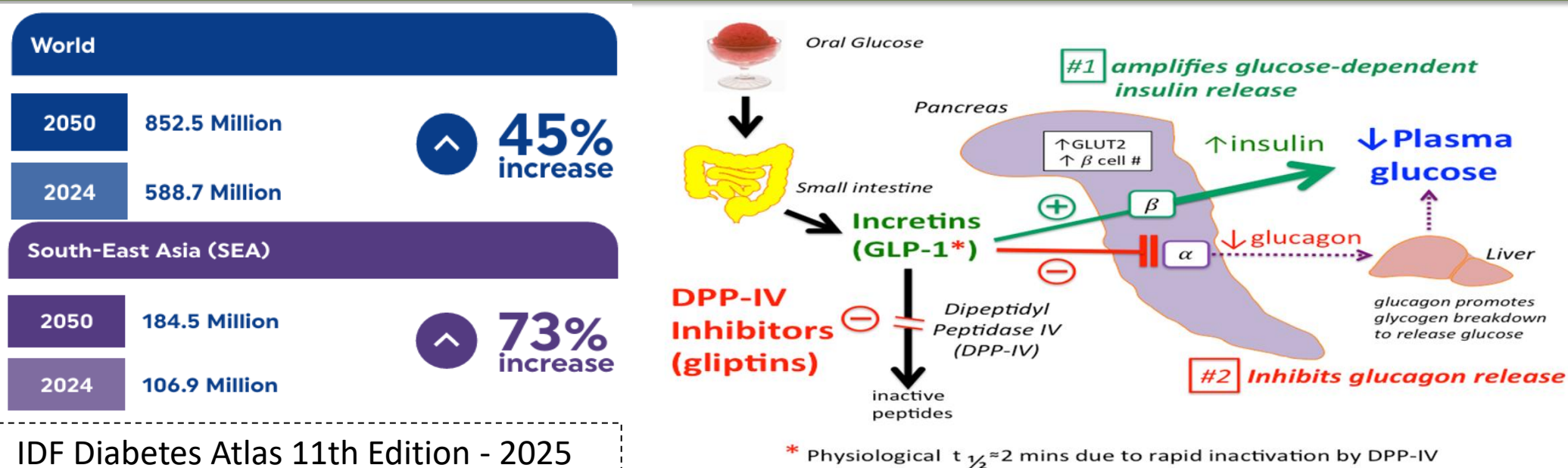
Hypoglycemic effect of alphaS1-casein hydrolysates extracted from milk of Gir cows

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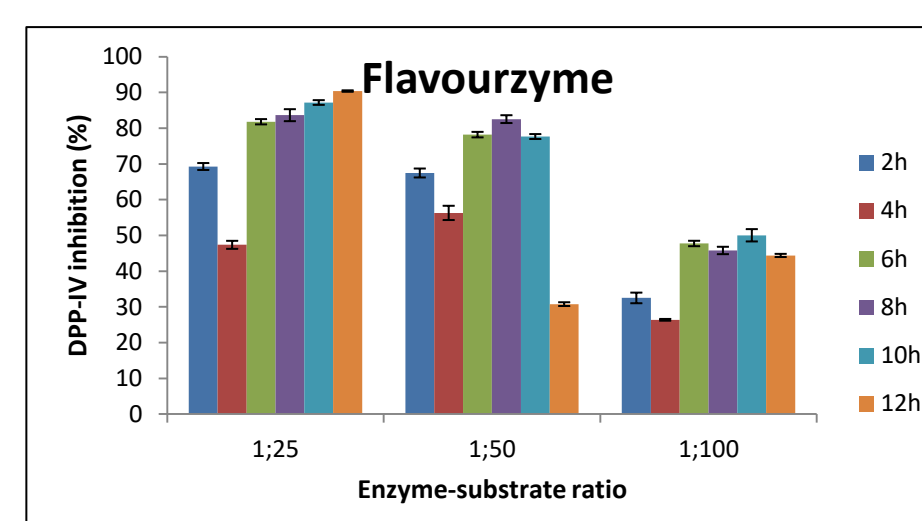
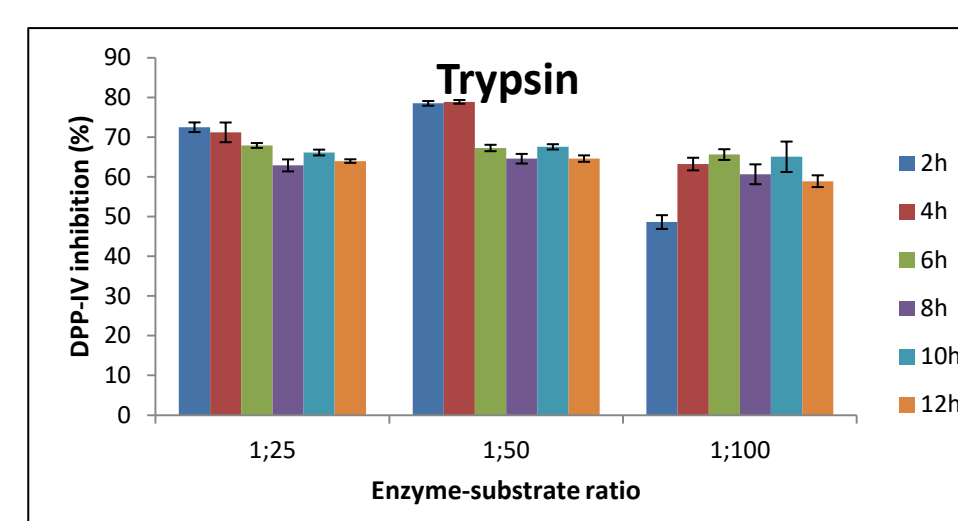
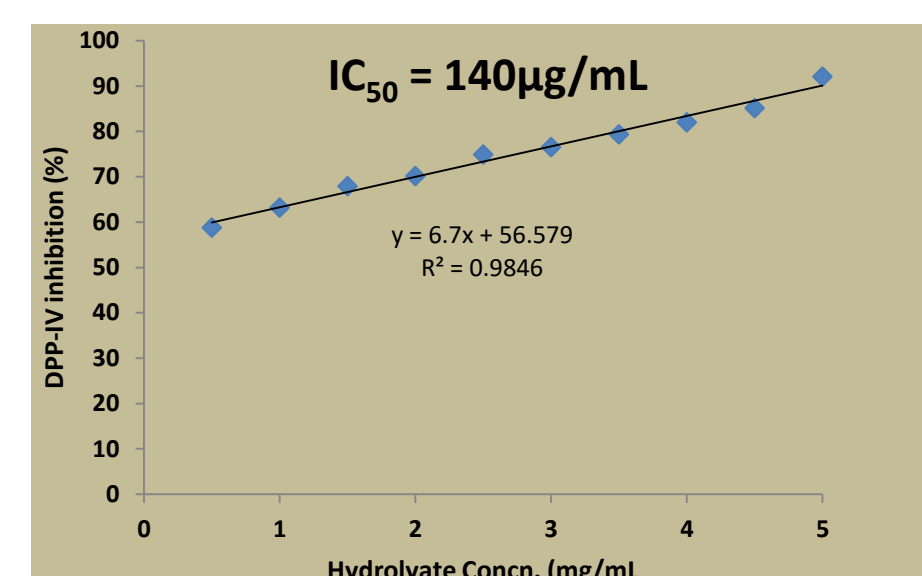
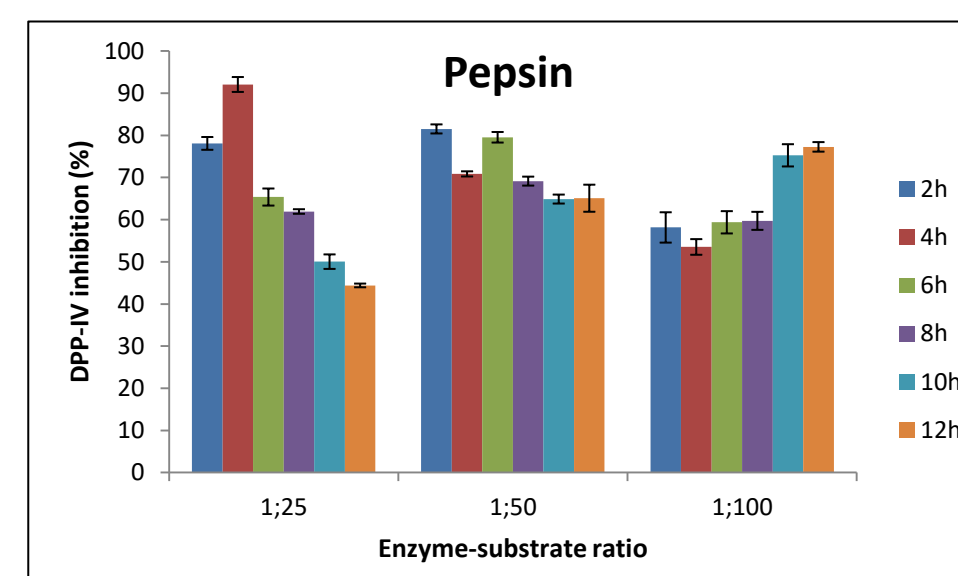
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INTRODUCTION & AIM



RESULTS & DISCUSSION

DPP-IV Inhibition Potential

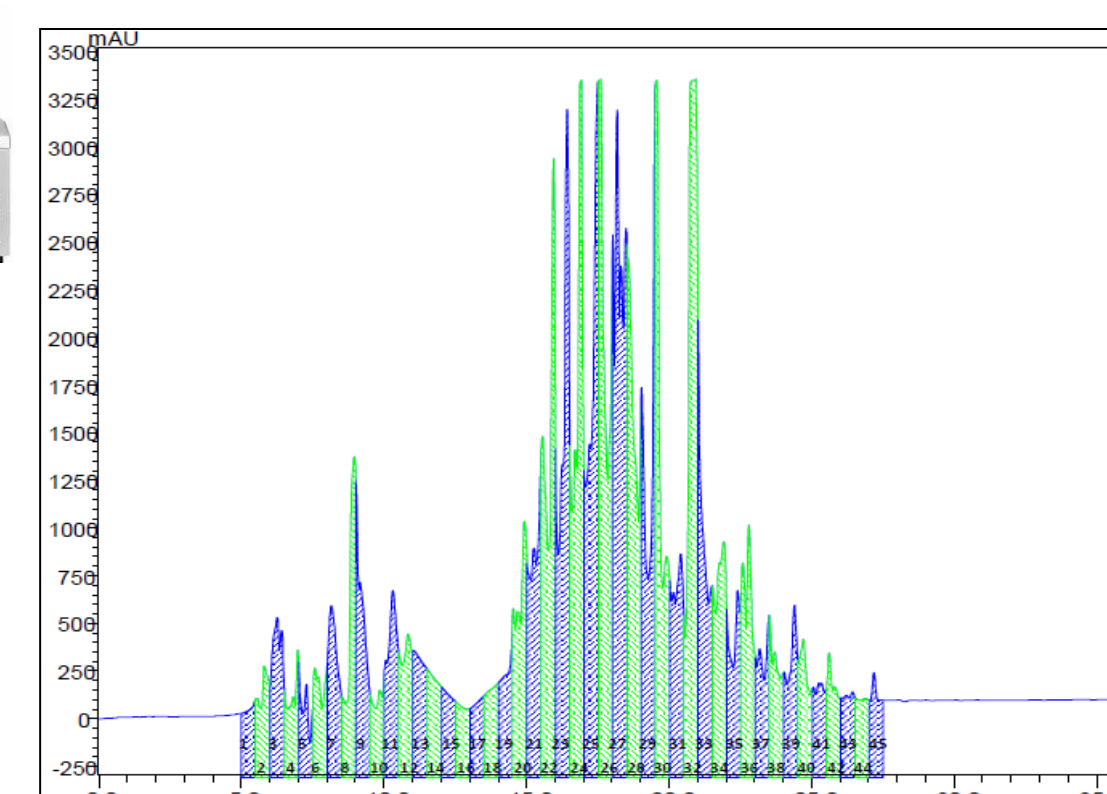


Ultra-filtration and Freeze drying

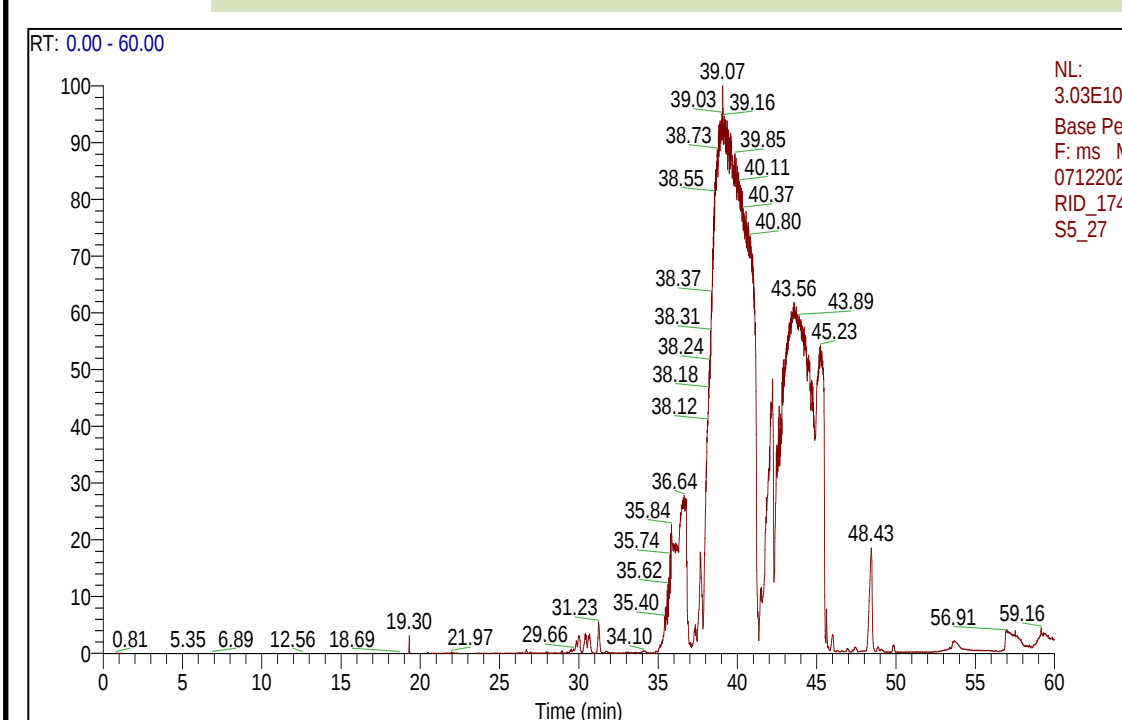
Ultrafiltration membrane (10 kDa and 3 kDa)



Fraction No.	DPP-IV inhibition %
3	60.5
25	62.28
27	65.31



Identification of peptide sequence

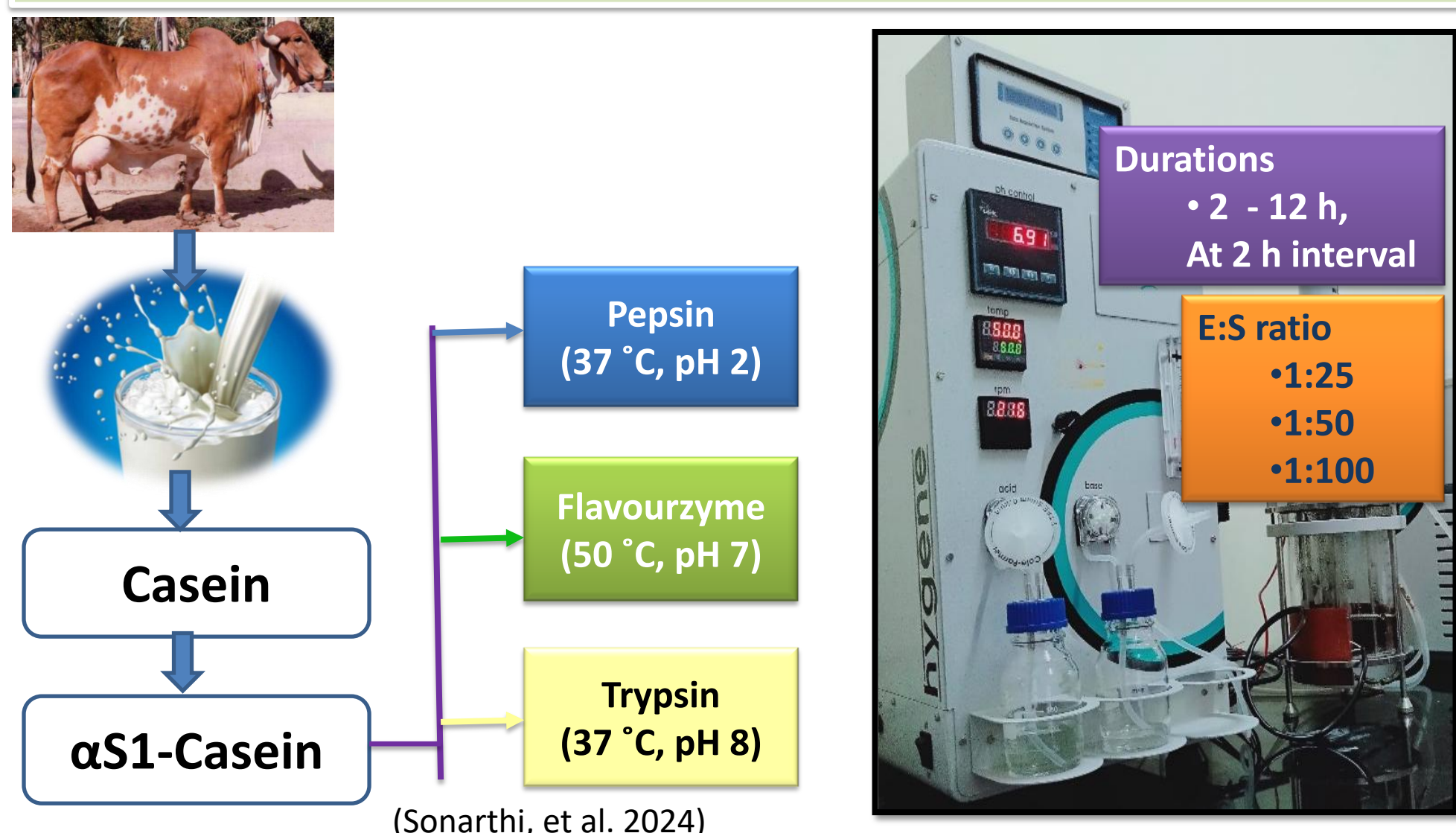


Sequence	m/z ratio	Previously reported (Yes/No)	DPP-IV inhibition IC ₅₀ value
IQKEDVPSE f (81-89) RT 19.36	522.76	No	1.67 mM
IPNPIGSENSE f (182-192) RT 37.28	578.78	No	2.62 mM

40 unique peptides were identified
2 were selected for synthesis

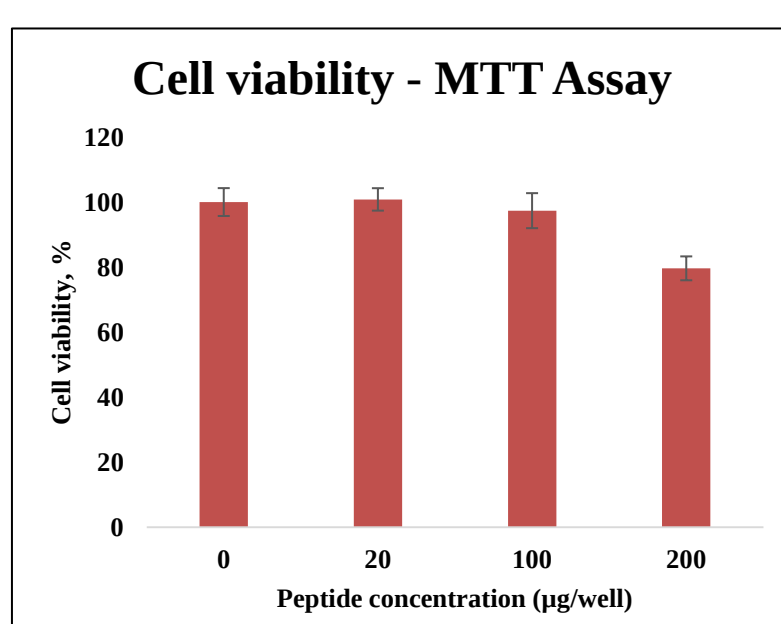
METHODS

Alpha_{s1}-casein isolation and preparation of its hydrolysates

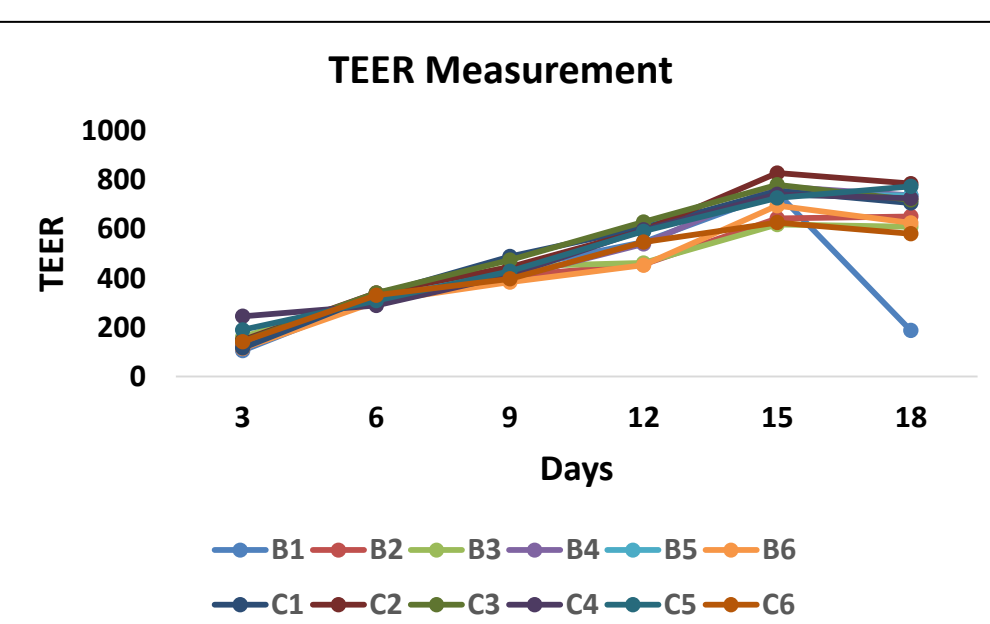


Propagation of Caco-2 cells

MTT Assay



Peptide transport assay



	Concentration, µg		
	0	20	100
Inserts (0 h)	0.0	201.2	610.1
Basal (2 h)	0.0	12.0 (5.96%)	80.2 (13.14%)

CONCLUSION

- Alpha S1 casein hydrolysates produced by pepsin showed higher DPP-IV inhibition potential
- Low molecular weight hydrolysates of alpha S1 casein (<3 kDa) has lower inhibition potential than their hydrolysates
- 2 peptides were identified with an IC₅₀ value of 1.6 to 2.6 mM
- Peptides transportation across the epithelial layer is concentration dependent phenomenon, around 13% of the peptides were able to transfer across at 100 µg concentration

FUTURE WORK / REFERENCES

- DPP-IV inhibitory peptides rich dietary supplement

Gallwitz, B. (2019). Clinical use of DPP-4 inhibitors. *Frontiers in endocrinology*, 10, 389.

Sonarathi, H., Kumar, M. H. S., Rajani, C. S., Sharma, A., Kumaresan, A., & Sabikhi, L. (2024). Production of DPP-IV inhibitory peptides-rich beta casein hydrolysates from milk of *Gir* (*Bos indicus*) cow and their evaluation for potential antidiabetic effect through in vitro assay. *International Journal of Dairy Technology*. 77 (1), 94-104. doi: 10.1111/1471-0307.13032.