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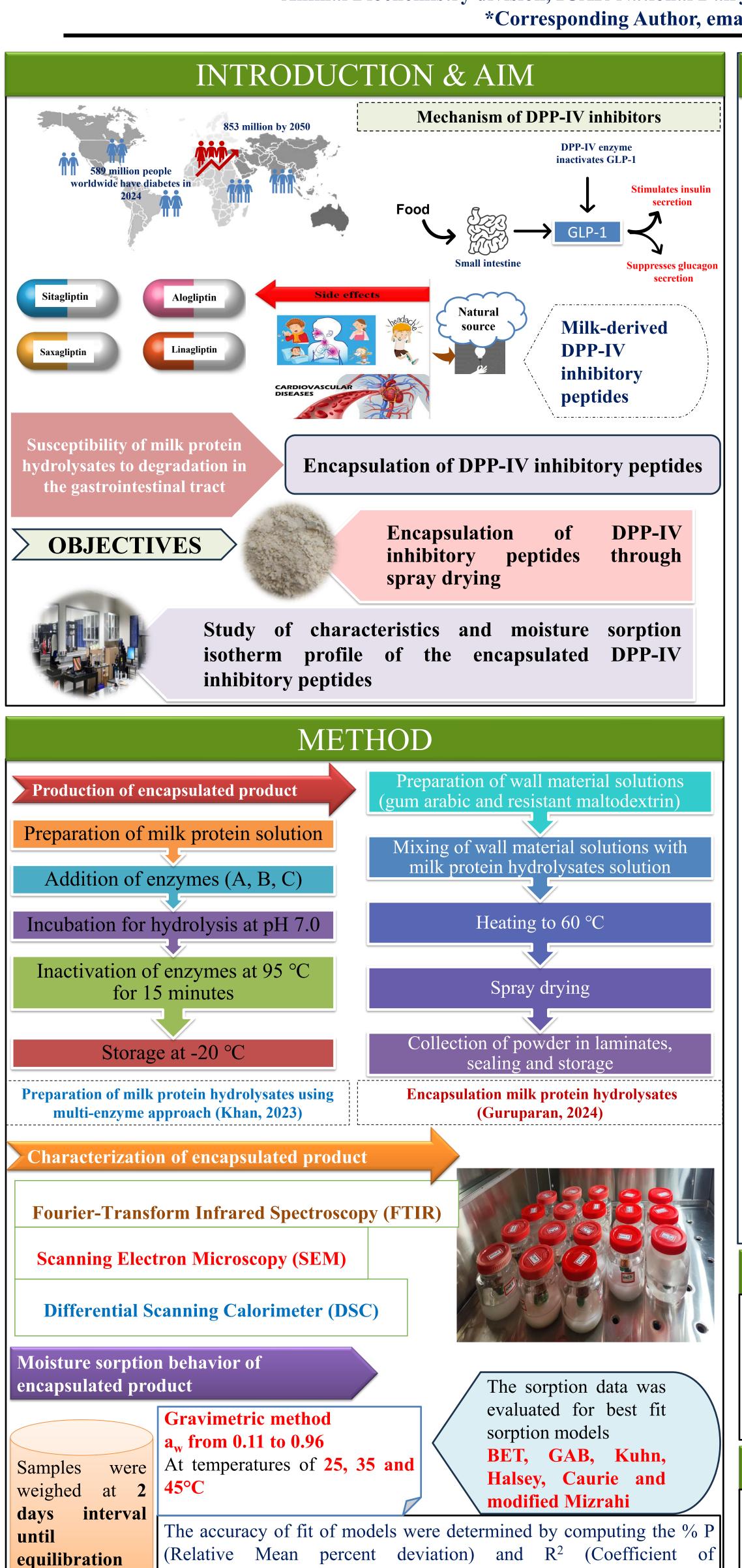
Structural characterization and moisture sorption analysis of encapsulated DPP-IV inhibitory peptides

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determination)

RESULTS & DISCUSSION Scanning Electron Microscopy Differential Scanning Calorimeter Glass transition temperature (°C): 57.11 **Fourier Transform Infrared Spectroscopy** Crystallization temperature (°C): 181.37 Melting temperature (°C) : 283.49 Sorption isosters of encapsulated hydrolysate at varying moisture contents Adsorption isotherms of Encapsulated Parameters of adsorption isotherm of hydrolysate at selected temperature encapsulated product Model Temperature (°C) **Parameter** 45 **2**5 Two Parameter model **BET** 0.9983 0.9742 0.9935 RMS% 0.2608 4.7244 16.1747 moisture/100g 300 250 200 **3**5 3.7985 52.923 348.78 23.557 10.541 13.923 **4**5 2.8490 2.2420 1.3350 Halsey 0.9992 0.9982 0.9994 RMS% 2.0643 2.4643 5.8672 3.8193 3.5728 7.6863 1.0769 1.5865 1.5163 0.9286 0.6303 0.6595 0.9990 Kuhn \mathbb{R}^2 0.9992 0.9996 RMS% 2.7923 3.7184 1.6206 4.1781 3.9714 2.3952 7.4167 6.1438 5.3000 Water activity -1.0002 -1.0196 -1.0228 0.9988 0.9977 0.9958 Caurie \mathbb{R}^2 28.5916 RMS% 3.1502 6.5809 4.8443 8.7767 33.5056 **Properties of sorbed water** -2.7118 1.9202 1.4617 -2.6208 1.2483 0.9243 Cauri **Density** Numbe **Bound** Surface Three Parameter model Mo e Mo r of water area of GAB 0.9990 0.9997 0.9991 Mo sorbed adsorbed sorption RMS% 2.311 3.7834 32.5395 (°C) layers, water 3.3676 4.6420 28.0854 (Cc, g 1.0038 1.0212 1.0296 cm⁻³) 3.2832 2.3050 2.0470 6.8494 5.2412 4.1803 25 2.849 6.849 -2.620 -2.712 1.035 -2.712 26.312 Modified 0.9989 0.9897 0.9961 RMS% 36.3525 7952.14 36.3525 Mizrahi 35 4.242 5.241 1.248 1.920 1.538 1.920 17.700 33.1656 56730.14 33.1656 -4.7130 -27.7830 -14.3260

CONCLUSION

17.216

- The current encapsulation method successfully encapsulated peptides and was confirmed with characterization
- Encapsulated powder showed low Tg and very high EMC at higher RH showed the hygroscopic nature

1.462

- The Kuhn, Halsey and GAB mathematical models showed the best fit based on RMS% and P values
- The isosteric heat of sorption showed independence of product to different temperatures

1.581

Due to the hygroscopic nature of encapsulated DPP-IV inhibitory peptides, it is necessary to enhance the reduction of hygroscopicity using various bulking agents

FUTURE WORK / REFERENCES

- Storage and shelf-life studies
- in vitro and in vivo validation
- Formulation applications

1.335

4.180

0.924

1.462

• Scale-up and commercial potential

6.0230

-9.4690

107.989

-97.1680

-59.9076

-59.9076