



IV CONGRESO IBEROAMERICANO DE INGENIERÍA DE LOS ALIMENTOS

Efecto de la presencia de sales emulsificantes en la temperatura de desnaturalización y de gelación de la β -lactoglobulina

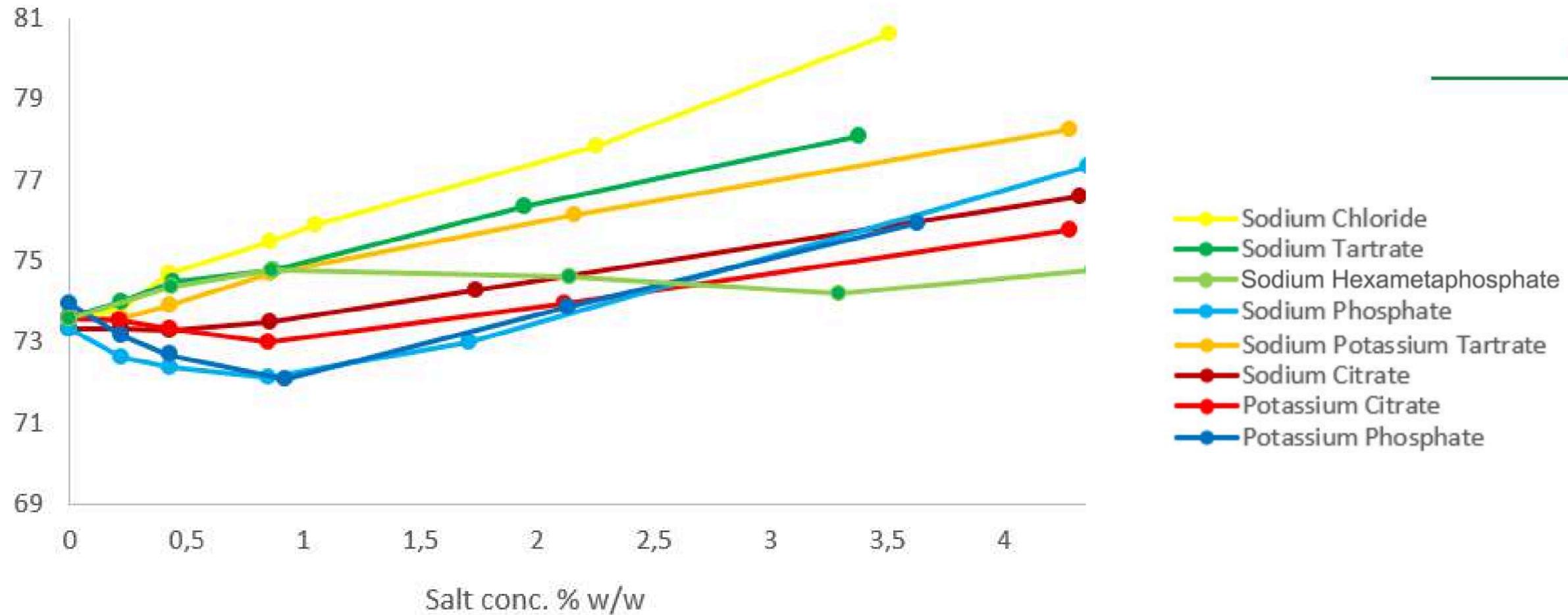
Daniel Perez / Licenciatura en Ciencia Y Tecnología de Lácteos

Organiza:





(A) 14 % β -Lactoglobulin



Perez, D., F. Harte, and T. Lopez-Pedemonte. "Ionic strength and buffering capacity of emulsifying salts determine denaturation and gelation temperatures of whey proteins." *Journal of dairy science* 105.9 (2022): 7230-7241.





100.0

80.0

60.0

40.0

20.0

0.0

0.0

0.2

0.4

0.6

0.8

- Sodium Chloride
- Sodium Tartrate
- Sodium Hexameta Pho:
- Sodium Phosphate
- Sodium Potassium T
- Sodium Citrate
- Potassium Citrate
- Potassium Phosphat





Efecto de la temperatura sobre distintas soluciones buffer

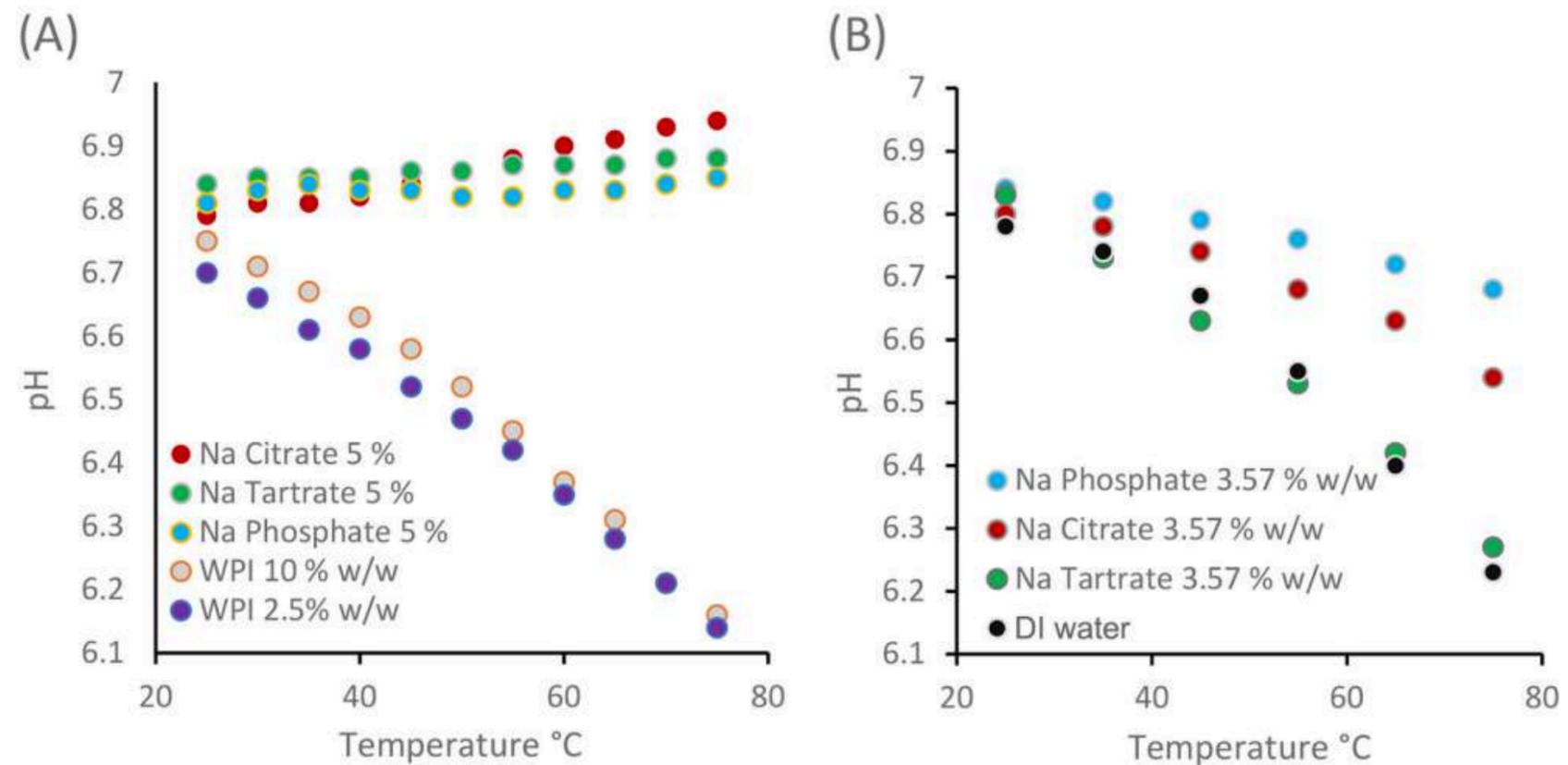
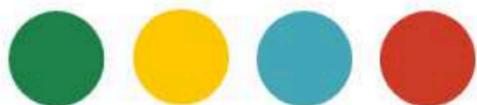


Figure 4. Effect of temperature on the pH of salt solutions and whey protein isolate (WPI) dispersions. (A) WPI dispersions (10% and 2.5% wt/wt in water) and 3 salt solutions (5% wt/wt salt in water), and (B) WPI dispersion (10% wt/wt) in water and 3 salt solutions (3.57 salt





Efectos iónico y de pH combinados

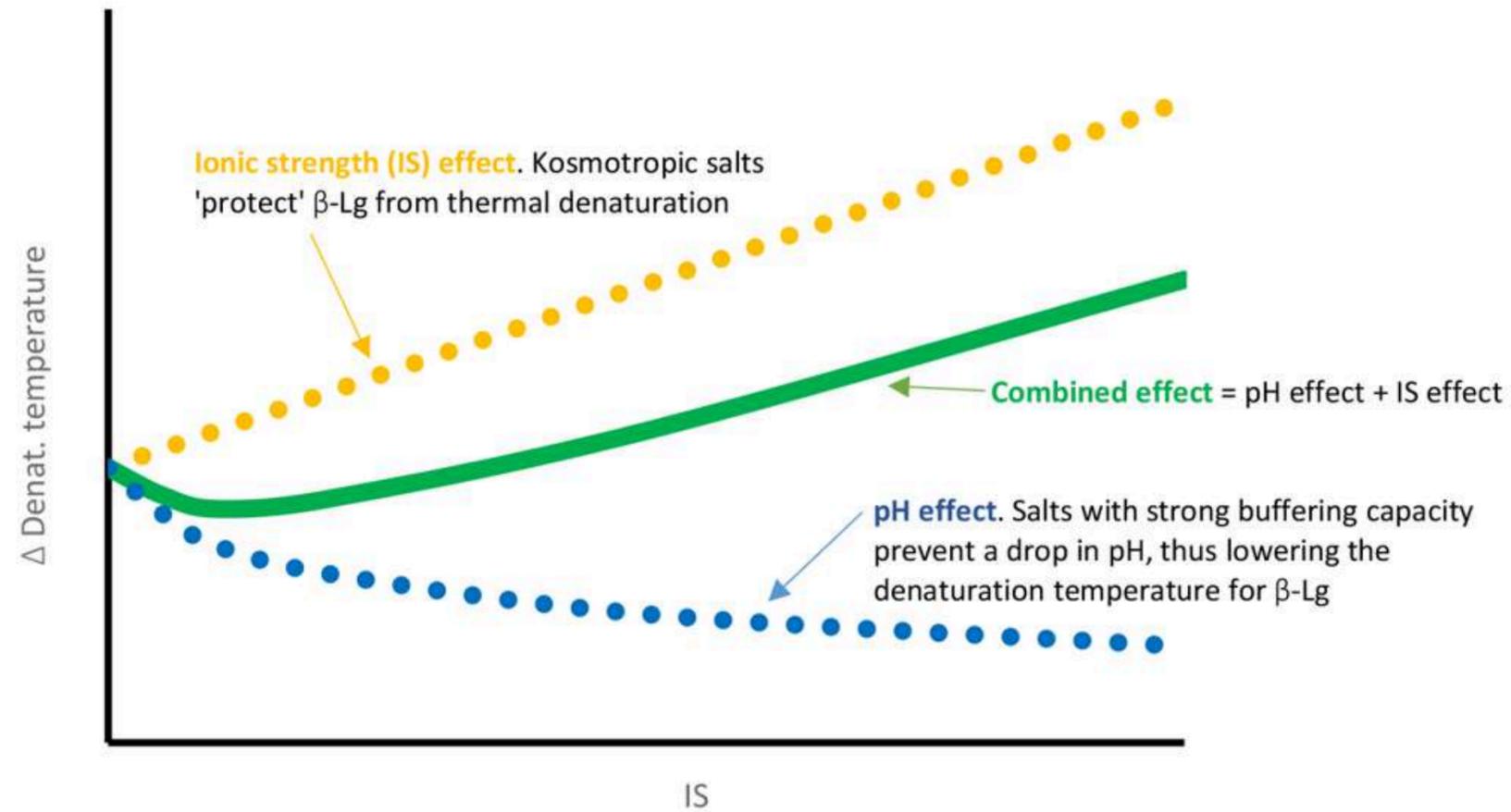
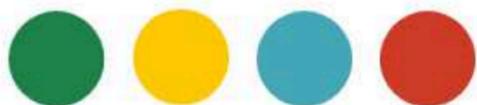


Figure 3. Representation of salt competing effects: ionic strength (IS) effect and buffering capacity effect, on the denaturation (Denat.) temperature of β -LG.





Descontando el efecto del pH

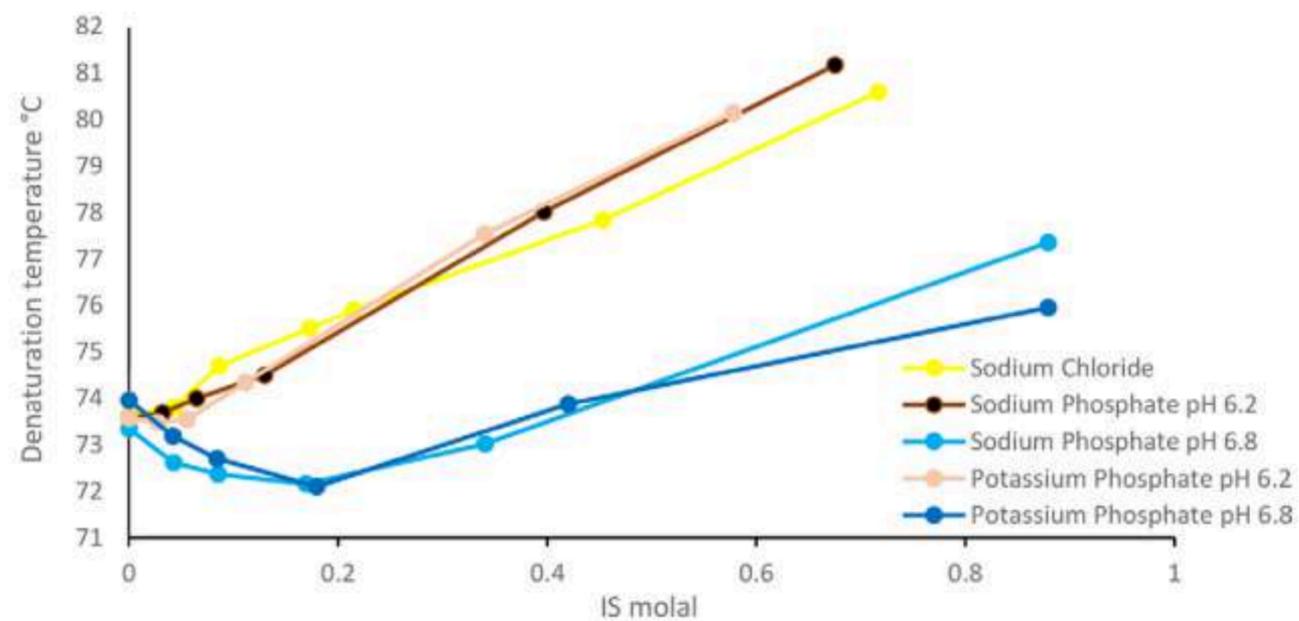
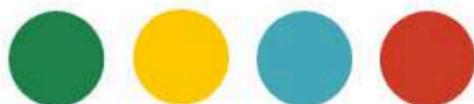


Figure 6. Denaturation temperature of 14% β -LG solutions in water containing increasing concentrations [ionic strength (IS) molal] of buffering salts with initial pH set to 6.2 and 6.8. Sodium chloride is shown as an example of a salt with no buffering capacity.





Temperaturas de gelificación y de desnaturalización Agua y soluciones salinas concentradas

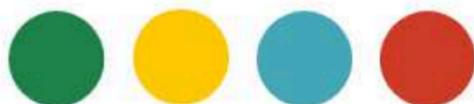
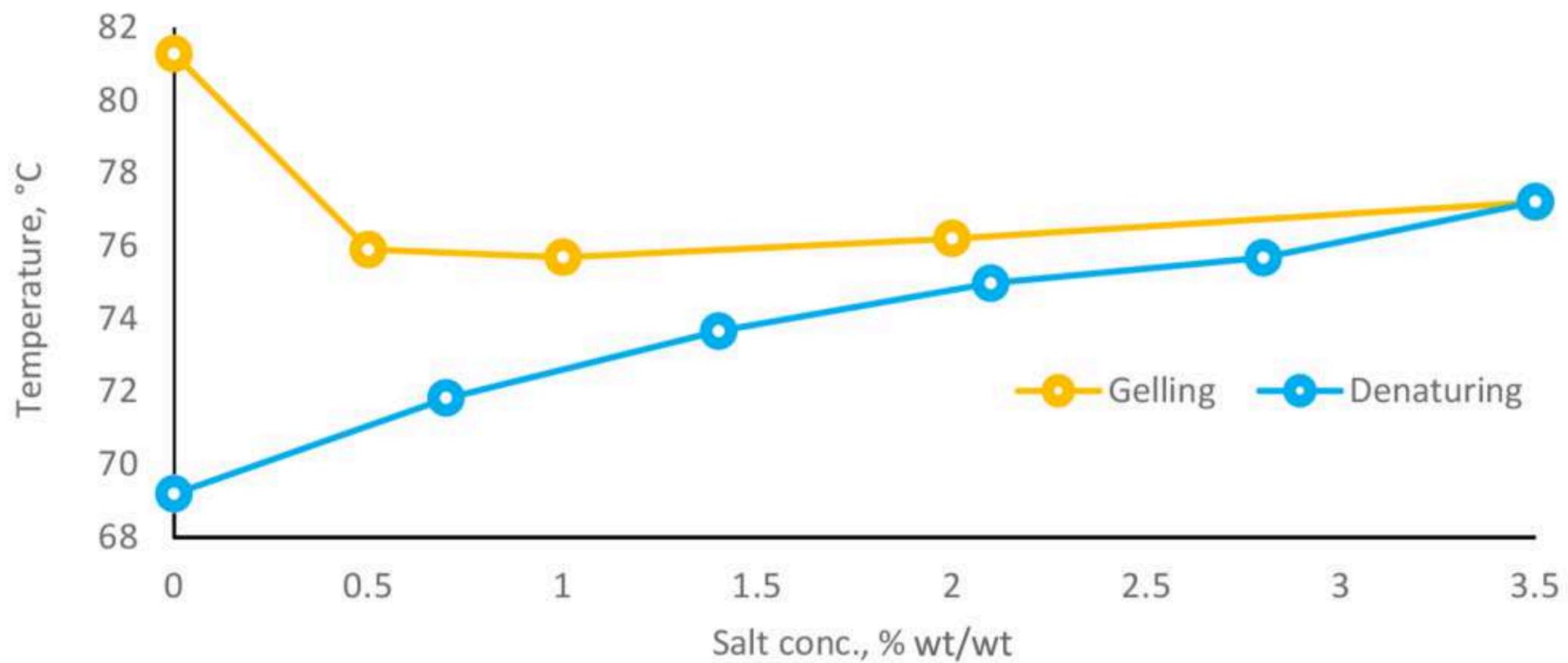
Table 3. Gelation temperature (temperature where storage modulus $G' > 1$ Pa) and denaturation temperature (differential scanning calorimetry) of whey protein isolate (WPI) dispersed in water and water salt solutions

Solution	Denaturation temperature		Difference (°C)
	Gelation temperature (°C) (WPI 14%, 4.37 wt/wt salt)	(°C) (WPI 30%, 3.5% wt/wt salt)	
Water	81.3	69.9	11.4
Sodium phosphate	74.3	73.8	0.5
Sodium citrate	74.3	74.3	0.0
Sodium tartrate	76.1	75.6	0.5
Sodium hexametaphosphate	74.2	73.0	1.2
Sodium chloride	77.2	77.2	0.0
Potassium phosphate	75.0	73.4	1.6
Potassium citrate	74.1	73.7	0.4
Potassium, sodium tartrate	75.6	75.6	0.0





Temperaturas de desnaturalización y de gelificación Cloruro de sodio, concentración variable





Muchas gracias!

