

**Supplementary Table 1. Effect of pH on the time taken for the particle size to increase by 50nm from the initial size (T<sub>50</sub>). The milk samples were either unheated or heated at 90°C for times up to 30 min and then diluted in buffer and rennet added. These are the data used in Figure 2D of the manuscript.**

pH	unheated	heated at 90°C for specified times (in minutes)					
		1	2.5	5	10	15	30
6.50	45(2) <sup>a</sup>	52 (2) <sup>a</sup>	66 (2) <sup>a</sup>	84 (3) <sup>a</sup>	76 (2) <sup>a</sup>	83 (2) <sup>a</sup>	74 (3) <sup>a</sup>
6.55	42 (2) <sup>a,b</sup>	<i>nd</i>	<i>nd</i>	77 (4) <sup>a</sup>	70 (3) <sup>b</sup>	75 (3) <sup>b</sup>	70 (2) <sup>a</sup>
6.60	40 (2) <sup>b,c</sup>	45 (2) <sup>b</sup>	58 (3) <sup>b</sup>	68 (2) <sup>b</sup>	65 (2) <sup>b</sup>	64 (3) <sup>c</sup>	64 (2) <sup>b</sup>
6.65	37 (1) <sup>c</sup>	<i>nd</i>	<i>nd</i>	60 (3) <sup>c</sup>	58 (3) <sup>c</sup>	57 (2) <sup>d</sup>	58 (3) <sup>c</sup>
6.70	36 (3) <sup>c,d</sup>	39 (1) <sup>c</sup>	51 (2) <sup>c</sup>	58 (3) <sup>c</sup>	49 (3) <sup>d</sup>	51 (3) <sup>e</sup>	48 (3) <sup>d</sup>
6.80	<i>nd</i>	35 (2) <sup>d</sup>	45 (2) <sup>d</sup>	<i>nd</i>	<i>nd</i>	<i>nd</i>	<i>nd</i>
6.90	34 (1) <sup>d</sup>	34 (2) <sup>d</sup>	42 (2) <sup>d</sup>	46 (3) <sup>d</sup>	36 (2) <sup>e</sup>	40 (2) <sup>f</sup>	36 (2) <sup>e</sup>
7.00	<i>nd</i>	33 (1) <sup>d</sup>	37 (2) <sup>e</sup>	<i>nd</i>	<i>nd</i>	<i>nd</i>	<i>nd</i>
7.10	32 (1) <sup>d</sup>	30 (1) <sup>e</sup>	35 (2) <sup>e</sup>	37 (2) <sup>e</sup>	31 (2) <sup>f</sup>	34 (3) <sup>g</sup>	31 (2) <sup>f</sup>

means with the same superscript within a column are not significantly different (P < 0.05)  
*nd*: not determined

**Supplementary Table 2. Effect of pH on the time taken for the particle size to increase by 50nm from the initial size (T50). The milk samples were heated at 20 to 100°C for 30 min and then diluted in buffer and rennet added. These are the data used in Figure 3C of the manuscript.**

pH	Temperature (°C)					
	20	40	60	80	90	100
6.50	46 (3) <sup>a</sup>	49 (4) <sup>a</sup>	50 (3) <sup>a</sup>	84 (4) <sup>a</sup>	83 (4) <sup>a</sup>	85(5) <sup>a</sup>
6.70	36 (2) <sup>b</sup>	35 (2) <sup>b</sup>	39 (2) <sup>b</sup>	52 (3) <sup>b</sup>	51 (5) <sup>b</sup>	55 (3) <sup>b</sup>
6.90	35 (3) <sup>b</sup>	33 (3) <sup>b</sup>	34 (3) <sup>b</sup>	44 (2) <sup>c</sup>	40 (3) <sup>c</sup>	46 (3) <sup>c</sup>
7.10	32 (2) <sup>b</sup>	31 (1) <sup>c</sup>	28 (2) <sup>c</sup>	37 (2) <sup>d</sup>	34 (2) <sup>d</sup>	40 (2) <sup>d</sup>

means with the same superscript within a column are not significantly different (P < 0.05)

**Supplementary Table 3. Percentages of  $\beta$ -lactoglobulin and  $\kappa$ -casein associated with the casein micelles in skim milk samples that were either unheated or heated at 90°C for times up to 30 min. These are the data used in Figure 4A and 4B of the manuscript.**

β-lactoglobulin							
pH	Unheated	heated at 90°C for specified times (in minutes)					
		1	2.5	5	10	15	30
6.50	2 (3) <sup>a</sup>	21 (2) <sup>a</sup>	59 (3) <sup>a</sup>	76 (3) <sup>a</sup>	79 (4) <sup>a</sup>	78 (4) <sup>a</sup>	82 (3) <sup>a</sup>
6.55	1 (2) <sup>a</sup>	18 (2) <sup>a</sup>	52(2) <sup>b</sup>	69 (3) <sup>b</sup>	72 (3) <sup>a</sup>	72 (2) <sup>a</sup>	70 (3) <sup>b</sup>
6.60	0 (0) <sup>a</sup>	12 (2) <sup>b</sup>	42 (3) <sup>c</sup>	59 (2) <sup>c</sup>	60 (3) <sup>b</sup>	57 (3) <sup>b</sup>	65 (3) <sup>b</sup>
6.65	0 (0) <sup>a</sup>	19 (3) <sup>a</sup>	26 (2) <sup>d</sup>	39 (4) <sup>d</sup>	47 (4) <sup>c</sup>	44 (4) <sup>c</sup>	48 (2) <sup>c</sup>
6.70	2 (4) <sup>a</sup>	7 (1) <sup>c</sup>	22(2) <sup>d</sup>	35 (3) <sup>d</sup>	34 (3) <sup>d</sup>	34 (2) <sup>d</sup>	31 (4) <sup>d</sup>
6.90	3 (2) <sup>a</sup>	11 (2) <sup>b,c</sup>	12(2) <sup>e</sup>	15 (2) <sup>e</sup>	9 (2) <sup>e</sup>	15 (2) <sup>e</sup>	12 (3) <sup>e</sup>
7.10	1 (2) <sup>a</sup>	8 (1) <sup>c</sup>	10(3) <sup>e</sup>	12 (2) <sup>e</sup>	6 (1) <sup>e</sup>	9 (1) <sup>f</sup>	10 (2) <sup>e</sup>

means with the same superscript within a column are not significantly different ( $P < 0.05$ )

**κ-casein**

pH	Unheated	heated at 90°C for specified times (in minutes)					
		1	2.5	5	10	15	30
6.50	89 (3) <sup>a</sup>	87 (3) <sup>a</sup>	89 (3) <sup>a</sup>	91 (3) <sup>a</sup>	92 (3) <sup>a</sup>	89 (3) <sup>a</sup>	90 (4) <sup>a</sup>
6.60	89 (4) <sup>a</sup>	86 (3) <sup>a,b</sup>	87 (2) <sup>a</sup>	88 (3) <sup>a,b</sup>	86 (3) <sup>a,b</sup>	83 (3) <sup>a,b</sup>	83 (2) <sup>a,b</sup>
6.70	88 (3) <sup>a</sup>	81 (4) <sup>a,b</sup>	84 (2) <sup>a</sup>	84 (3) <sup>b</sup>	83 (4) <sup>b,c</sup>	79 (2) <sup>b</sup>	82 (3) <sup>b</sup>
6.80	86 (3) <sup>a</sup>	81 (2) <sup>b</sup>	76 (3) <sup>b</sup>	75 (3) <sup>c</sup>	77 (2) <sup>c</sup>	73 (3) <sup>c</sup>	74 (3) <sup>c</sup>
6.90	85 (2) <sup>a</sup>	72 (2) <sup>c</sup>	69 (3) <sup>c</sup>	71 (3) <sup>c</sup>	70 (3) <sup>d</sup>	67 (3) <sup>c</sup>	68 (3) <sup>c</sup>
7.00	78 (3) <sup>b</sup>	65 (3) <sup>d</sup>	62 (3) <sup>d</sup>	61 (4) <sup>d</sup>	57 (2) <sup>e</sup>	58 (2) <sup>d</sup>	56 (3) <sup>d</sup>
7.10	77 (4) <sup>b</sup>	53 (3) <sup>e</sup>	47 (2) <sup>e</sup>	45 (2) <sup>e</sup>	48 (2) <sup>f</sup>	48 (2) <sup>e</sup>	47 (2) <sup>e</sup>

means with the same superscript within a column are not significantly different ( $P < 0.05$ )

**Supplementary Table 4. Percentages of  $\beta$ -lactoglobulin and  $\kappa$ -casein associated with the casein micelles in skim milk samples that were heated at 20 to 100°C for 30 min. These are the data used in Figure 4C and 4D of the manuscript.**

<b><math>\beta</math>-lactoglobulin</b>					
pH	Temperature (°C)				
	20°C	40	60	80	100
6.50	0 (1) <sup>a</sup>	1 (2) <sup>a</sup>	2 (3) <sup>a</sup>	68 (6) <sup>a</sup>	91 (5) <sup>a</sup>
6.70	1 (2) <sup>a</sup>	1 (2) <sup>a</sup>	1 (1) <sup>a</sup>	30 (5) <sup>b</sup>	35 (7) <sup>b</sup>
6.90	0 (1) <sup>a</sup>	0 (1) <sup>a</sup>	1 (1) <sup>a</sup>	10 (2) <sup>c</sup>	17 (4) <sup>c</sup>
7.10	2 (2) <sup>a</sup>	1 (2) <sup>a</sup>	1 (1) <sup>a</sup>	5 (2) <sup>d</sup>	13 (2) <sup>c</sup>

means with the same superscript within a column are not significantly different ( $P < 0.05$ )

<b><math>\kappa</math>-casein</b>					
pH	Temperature (°C)				
	20°C	40	60	80	100
6.50	86 (2) <sup>a</sup>	87 (3) <sup>a</sup>	87 (3) <sup>a</sup>	85 (4) <sup>a</sup>	79 (4) <sup>a</sup>
6.70	85 (3) <sup>a</sup>	84 (2) <sup>a</sup>	80 (3) <sup>b</sup>	74 (3) <sup>b</sup>	68 (3) <sup>b</sup>
6.90	84 (3) <sup>a</sup>	83 (2) <sup>a,b</sup>	77 (2) <sup>b</sup>	66 (3) <sup>c</sup>	50 (4) <sup>c</sup>
7.10	80 (4) <sup>a</sup>	79 (1) <sup>b</sup>	68 (3) <sup>c</sup>	59 (3) <sup>d</sup>	40 (3) <sup>d</sup>

means with the same superscript within a column are not significantly different ( $P < 0.05$ )