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Infusion pasteurization of milk: Influence on the viscosity and casein micelle size

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1	Milk is normally heat treated in order to obtain safe dairy products with an elongated shelf life	1
2	as compared to raw milk. New methods, such as infusion pasteurization, for heat treatment of milk	2
3	are currently being developed. This provides an opportunity for treating milk in a manner that	3
4	creates different or improved functional properties compared to traditional indirect pasteurization.	4
5	Infusion pasteurization has a time-temperature profile characterized by very rapid heating to	5
6	relatively high temperatures, short holding times and very rapid cooling, which may lead to	6
7	products with different properties as compared to products subjected to the standard low	7
8	pasteurization at 72°C for 15s.	8
9	Infusion pasteurization was performed on raw milk with two different holding times (0.1s and	9
10	0.7s) and for each holding time samples were drawn at three different temperatures (80°C, 100°C,	10
11	and 120°C). Samples were compared to raw milk and to milk from the same batch subjected to a	11
12	standard pasteurization at 72°C for 15s. The size of the casein micelles and the viscosity were	12
13	measured in skimmed milk samples, using dynamic light scattering and capillary viscometri,	13
14	respectively.	14
15	The results showed a broadening of the size distributions of the casein micelles as the	15
16	temperature of the infusion pasteurization increased from 80°C to 120°C with no marked	16
17	difference between the two holding times. The viscosity also increased with increasing intensity of	17
18	the infusion pasteurization treatment. Little or no difference was seen between the raw milk, the	18
19	standard pasteurization and the infusion treatments at 80°C regarding both casein micelle size and	19
20	viscosity.	20
21	The observed changes in the investigated physical properties of the infusion pasteurization	21
22	treated milk indicate that this novel pasteurization process might result in milk with altered	22
23	functionality when used in the production of dairy products. This is currently under investigation.	23
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