Claims

1. A method for reducing the microbial load of a liquid or viscous composition comprising one or more bioactive molecules naturally occurring in milk, the method comprising the steps of subjecting said composition to a pulsed electric field (PEF) treatment, wherein in said PEF treatment, said composition is exposed to a specific energy of 600 or less kJ per kg composition, wherein said composition is exposed to a PEF with a field strength of 10 to 20 kV/cm, wherein said PEF treatment is applied in one or more colinear treatment chambers having a lumen, wherein said composition is continuously guided through said lumen of said colinear treatment chamber, and wherein an inside element is provided in said lumen, such that, in said treatment chamber, said composition is guided around said inside element.

2. The method of claim 1, wherein in said PEF treatment, a pulse duration of 10 µs or more, preferably 15 µs or more are applied.

3. The method of any one of the preceding claims, wherein in said PEF treatment, square wave electric pulses and/or bipolar pulses are applied.

4. The method of any one of the preceding claims, which is a continuous method and/or in which said composition is continuously subjected to said PEF treatment.

5. The method of any one of the preceding claims, wherein a temperature of said composition, before subjection to said PEF treatment, is set to a temperature of 20-45°C.

~~6. The method of any one of the preceding claims, wherein said PEF treatment is applied in one or more colinear treatment chambers having a lumen, wherein said composition is continuously guided through said lumen of said colinear treatment chamber, and wherein an inside element is provided in said lumen, such that, in said treatment chamber, said composition is guided around said inside element.~~

~~7.~~6. The method of any one of the preceding claims, wherein said composition comprises or consists substantially of one or more selected from the group consisting of whole milk, semi-skimmed milk, skimmed milk, colostrum, reduced fat milk, low fat

milk, fat-free milk, whey (milk plasma), such as sweet whey or acid whey, milk-based drink, yoghurt, frozen yoghurt, a yoghurt drink, ice cream, cream, butter, fresh cheese, curd, and cheese, powders or otherwise dried forms of any one of the aforementioned, and compositions comprising combinations of two or more of the aforementioned.

~~8.~~7. The method of any one of the preceding claims, wherein said one or more bioactive molecules are selected independently from native proteins, bioactive lipids, sialic acid, nucleotides, oligosaccharides, amino acids, taurine and vitamins naturally occurring in milk.

~~9.~~8. The method of any one of the preceding claims, wherein said one or more bioactive molecule is selected from bioactive proteins, said protein being selected from antimicrobial factors, immunoglobulins, growth factors, cytokines and/or pro-/anti-inflammatory factors, chemokines, enzymes, including digestive enzymes, protein hormones, transporters, glycomacropeptide, β-lactoglobulin, α-lactalbumin, milk fat globule membrane proteins and combinations of two or more of the aforementioned, wherein, following the step of subjecting said composition to a PEF treatment, at least 30% of said protein is present in a native form.

~~10.~~9. The method of any one of the preceding claims, wherein a reduction of the microbial load achieved is at least 4 log.

~~11. A composition comprising bioactive molecules, the composition being obtainable by the method of any one of the preceding claims.~~

~~12. A pulsed electric field (PEF) treated composition, which is microbiologically safe and which comprises one or more proteins naturally occurring in milk, wherein at least 30% of the respective protein is in a native form.~~

~~13. The composition of claim 12, wherein said protein is selected from antimicrobial factors, immunoglobulins, growth factors, cytokines and/or pro-/anti-inflammatory factors, chemokines, enzymes, including digestive enzymes, protein hormones,~~

transporters, glycomacropeptide, β-lactoglobulin, α-lactalbumin, milk fat globule membrane proteins and combinations of two or more of the aforementioned, wherein at least 30% of said protein is present in a native form.

14. The composition of any one of claims 12 - 13, wherein said one or more proteins are selected from immunoglobulins, lactoferrin, β-lactoglobulin, α-lactalbumin and TGF-β.

15. The composition of any one of claims 12 - 14, which comprises lactoferrin, wherein at least 75% of the total lactoferrin in said composition is present in native form.

16. The composition of any one of claims 12 - 15, which comprises one or more selected from the group of colostrum, whole milk, semi-skimmed milk, skimmed milk, colostrum, reduced fat milk, low fat milk, fat-free milk, whey (milk plasma), such as sweet whey or acid whey, milk-based drink, yoghurt, frozen yoghurt, a yoghurt drink, ice cream, cream, butter, fresh cheese, curd, and cheese, powders or otherwise dried forms of any one of the aforementioned, and compositions comprising combinations of two or more of the aforementioned.