CLAIMS

1. A polypeptide comprising an amino acid sequence according to SEQ ID NO: 1 or SEQ ID NO: 86, or a fragment of any of these, ~~thereof~~ the fragment comprising an amino acid sequence selected from the group consisting of SEQ ID NO: 4, 5, 69 and 87, or comprising the amino acid sequence of SEQ ID NO: 4 and 5 ~~the enzymatic active domain and/or cell wall binding domain of said polypeptide or a derivative of said polypeptide or said fragment, wherein said derivative exhibits the lytic activity of said polypeptide and/or the activity of said fragment~~.

~~2. The polypeptide according to claim 1, wherein the fragment comprises an amino acid sequence according to SEQ ID NO: 4, 5 or 69 or 4 and 5.~~

~~3. The polypeptide according to claim 1 or 2, wherein the derivative has a deletion, addition, insertion and/or substitution in the amino acid sequence according to SEQ ID NO: 1, 4, 5 and/or 69.~~

~~3.~~

~~4. The polypeptide according to claim 3, wherein the derivative comprises an amino acid sequence according to SEQ ID NO: 86 or 87.~~

~~4.~~

~~5.~~2. The polypeptide according to claim 1 ~~any one of the preceding claims~~ comprising additionally a tag, preferably a His_6-tag.

~~6.~~3. The polypeptide according to claim ~~5~~3, wherein said polypeptide comprises an amino acid sequence according to SEQ ID NO: 47 or 88.

~~7.~~4. A fusion protein comprising a polypeptide according to any one of the preceding claims and a peptide stretch fused to said polypeptide at the N- or C-terminus, wherein said peptide stretch is a cationic peptide, polycationic peptide, amphipatic peptide, sushi peptide, defensin, hydrophobic peptide and/or an antimicrobial peptide.

~~8.~~5. The fusion protein according to claim 7~~4~~, wherein said peptide stretch comprises -5 to 100 amino acid residues.

~~9.~~6. The fusion protein according to claim ~~7~~ 4 or ~~8~~5, wherein said cationic and/or polycationic peptide stretch comprises at least one amino acid residue selected out of

the group consisting of arginine, histidine and lysine residues~~, in particular wherein at least 70% of the amino acid residues comprised in said peptide stretch are arginine, histidine and/or lysine residues, in particular arginine and/or lysine residues~~.

~~10.~~7. The fusion protein according to claim ~~7~~4, wherein the amphipatic peptide comprises at least one positively charged amino acid residues selected out of the group consisting of lysine, arginine and histidine residues, combined to at least one hydrophobic amino acid residue selected out of the group consisting of valine, isoleucine, leucine, methionine, phenylalanine, tryptophan, cysteine, alanine, tyrosine, histidine, threonin, serine, proline and glycine residues.

~~11.~~8. The fusion protein according to claim ~~7~~4, wherein the peptide stretch comprises an amino acid sequence according to SEQ ID NO: 6-39, 50-53, 68, 70-73 or 117-119.

~~12.~~9. The fusion protein according to claim ~~7~~4, wherein said fusion protein comprises an amino acid sequence according to SEQ ID NO: 43, 49, 54-67, 74-85 or 115-116.

~~13.~~10. An isolated nucleic acid molecule encoding a polypeptide according to any one of claims 1 to 6 or a fusion protein according to any one of claims 7~~4~~ to ~~12~~9.

~~14.~~11. A vector comprising the nucleic acid molecule according to claim~~13~~10.

~~15.~~12. A host cell comprising the nucleic acid molecule according to claim ~~13~~10 or the vector according to claim ~~14~~11.

~~16.~~13. The polypeptide according to any one of claims 1 to ~~6~~3 or the fusion protein according to any one of claims ~~7~~4 to ~~12~~9 for use as human medical, veterinary medical or diagnostic substance, as an antimicrobial in food or on cosmetics, as disinfecting agent or in the environmental field.

~~17.~~14. The polypeptide according to any one of claims 1 to ~~6~~3 or the fusion protein according to any one of claims ~~7~~4 to ~~12~~9 for use as a medicament for treatment or prevention of Gram-negative bacterial infections.

~~18.~~15. The use of the polypeptide according to any one of claims 1 to ~~63~~ or the fusion protein according to any one of claims ~~74~~ to ~~129~~ for the treatment or prevention of Gram-negative bacterial contamination of foodstuff, of food processing equipment, of food processing plants, of surfaces coming into contact with foodstuff, of medical devices, of surfaces in hospitals and surgeries.

~~19.~~16. Pharmaceutical composition comprising the polypeptide according to any one of claims 1 to ~~63~~ or the fusion protein according to any one of claims ~~74~~ to ~~129~~.

~~20.~~17. The fusion protein according to claim ~~74~~, wherein said peptide stretch comprises 5 to 50 amino acid residues.

~~21.~~18. The fusion protein according to claim ~~47~~, wherein said peptide stretch comprises 5 to 30 amino acid residues.

~~22.~~19. The fusion protein according to claim ~~74~~ or ~~85~~, wherein said cationic and/or polycationic peptide stretch comprises at least one amino acid residue selected out of the group consisting of arginine, histidine and lysine residues, wherein at least 70% of the amino acid residues comprised in said peptide stretch are arginine, histidine and/or lysine residues.

~~23.~~20. The fusion protein according to claim ~~74~~ or ~~85~~, wherein said cationic and/or polycationic peptide stretch comprises at least one amino acid residue selected out of the group consisting of arginine, histidine and lysine residues, wherein at least 70% of the amino acid residues comprised in said peptide stretch are arginine and/or lysine residues.

~~24.~~21. The fusion protein according to claim ~~74~~, wherein the amphipatic peptide comprises at least one positively charged amino acid residues selected out of the group consisting of lysine, arginine and histidine residues, combined to at least one hydrophobic amino acid residue selected out of the group consisting of valine, isoleucine, leucine, methionine, phenylalanine, tryptophan, cysteine, alanine, tyrosine, histidine, threonin, serine, proline and glycine residues, wherein at least 70% of the said amino acid residues in said amphipatic peptide are either arginine or lysine residues and at least 30% of the said amino acid residues in said amphipatic peptide

are valine, isoleucine, leucine, methionine, phenylalanine, tryptophan, cysteine, alanine, tyrosine, histidine, threonin, serine, proline or glycine residues.

CLAIMS

1. A polypeptide comprising an amino acid sequence according to SEQ ID NO: 1 or SEQ ID NO: 86, or a fragment of any of these, the fragment comprising an amino acid sequence selected from the group consisting of SEQ ID NO: 4, 5, 69 and 87, or comprising the amino acid sequence of SEQ ID NO: 4 and 5.

2. The polypeptide according to claim 1 comprising additionally a tag, preferably a His_6-tag.

3. The polypeptide according to claim 3, wherein said polypeptide comprises an amino acid sequence according to SEQ ID NO: 47 or 88.

4. A fusion protein comprising a polypeptide according to any one of the preceding claims and a peptide stretch fused to said polypeptide at the N- or C-terminus, wherein said peptide stretch is a cationic peptide, polycationic peptide, amphipatic peptide, sushi peptide, defensin, hydrophobic peptide and/or an antimicrobial peptide.

5. The fusion protein according to claim 74, wherein said peptide stretch comprises 5 to 100 amino acid residues.

6. The fusion protein according to claim 4 or 5, wherein said cationic and/or polycationic peptide stretch comprises at least one amino acid residue selected out of the group consisting of arginine, histidine and lysine residues.

7. The fusion protein according to claim 4, wherein the amphipatic peptide comprises at least one positively charged amino acid residues selected out of the group consisting of lysine, arginine and histidine residues, combined to at least one hydrophobic amino acid residue selected out of the group consisting of valine, isoleucine, leucine, methionine, phenylalanine, tryptophan, cysteine, alanine, tyrosine, histidine, threonin, serine, proline and glycine residues.

8. The fusion protein according to claim 4, wherein the peptide stretch comprises an amino acid sequence according to SEQ ID NO: 6-39, 50-53, 68, 70-73 or 117-119.

9. The fusion protein according to claim 4, wherein said fusion protein comprises an amino acid sequence according to SEQ ID NO: 43, 49, 54-67, 74-85 or 115-116.

10. An isolated nucleic acid molecule encoding a polypeptide according to any one of claims 1 to 6 or a fusion protein according to any one of claims 74 to 9.

11. A vector comprising the nucleic acid molecule according to claim10.

12. A host cell comprising the nucleic acid molecule according to claim 10 or the vector according to claim 11.

13. The polypeptide according to any one of claims 1 to 3 or the fusion protein according to any one of claims 4 to 9 for use as human medical, veterinary medical or diagnostic substance, as an antimicrobial in food or on cosmetics, as disinfecting agent or in the environmental field.

14. The polypeptide according to any one of claims 1 to 3 or the fusion protein according to any one of claims 4 to 9 for use as a medicament for treatment or prevention of Gram-negative bacterial infections.

15. The use of the polypeptide according to any one of claims 1 to 3 or the fusion protein according to any one of claims 4 to 9 for the treatment or prevention of Gram-negative bacterial contamination of foodstuff, of food processing equipment, of food processing plants, of surfaces coming into contact with foodstuff, of medical devices, of surfaces in hospitals and surgeries.

16. Pharmaceutical composition comprising the polypeptide according to any one of claims 1 to 3 or the fusion protein according to any one of claims 4 to 9.

17. The fusion protein according to claim 4, wherein said peptide stretch comprises 5 to 50 amino acid residues.

18. The fusion protein according to claim 4, wherein said peptide stretch comprises 5 to 30 amino acid residues.

19. The fusion protein according to claim 4 or 5, wherein said cationic and/or polycationic peptide stretch comprises at least one amino acid residue selected out of the group consisting of arginine, histidine and lysine residues, wherein at least 70% of the amino acid residues comprised in said peptide stretch are arginine, histidine and/or lysine residues.

20. The fusion protein according to claim 4 or 5, wherein said cationic and/or polycationic peptide stretch comprises at least one amino acid residue selected out of the group consisting of arginine, histidine and lysine residues, wherein at least 70% of the amino acid residues comprised in said peptide stretch are arginine and/or lysine residues.

21. The fusion protein according to claim 4, wherein the amphipatic peptide comprises at least one positively charged amino acid residues selected out of the group consisting of lysine, arginine and histidine residues, combined to at least one hydrophobic amino acid residue selected out of the group consisting of valine, isoleucine, leucine, methionine, phenylalanine, tryptophan, cysteine, alanine, tyrosine, histidine, threonin, serine, proline and glycine residues, wherein at least 70% of the said amino acid residues in said amphipatic peptide are either arginine or lysine residues and at least 30% of the said amino acid residues in said amphipatic peptide are valine, isoleucine, leucine, methionine, phenylalanine, tryptophan, cysteine, alanine, tyrosine, histidine, threonin, serine, proline or glycine residues.