method of treating or preventing Gram-negative bacterial infections in a subject, such as a human or an animal. In one aspect, there is provided the use of the polypeptide according to the present invention in the manufacture of a medicament for treatment or prevention of Gram-negative bacterial infections. The polypeptide according to the present invention can also be used as diagnostic substance. For example, lysis of bacteria upon ex vivo contact with a polypeptide according to the present invention (e.g. in a bacterial culture established from a sample of a subject or from the environment) indicates presence of Gram-negative bacteria.

A sixth object of the present invention relates to the use of a polypeptide according to the present invention as an antimicrobial in food, feed or in cosmetics, or as a disinfecting agent. Another preferred embodiment relates to the use of said polypeptide according to the present invention for the treatment or prevention of Gram-negative bacterial contamination of foodstuff, of food processing equipment, of food processing plants, of (inanimate) surfaces coming into contact with foodstuff, of feed, of feed processing equipment, of feed processing plants, of (inanimate) surfaces coming into contact with feed, of medical devices, of (inanimate) surfaces in hospitals and doctor's offices.

DETAILED DESCRIPTION

Legends to the figures

The following figures serve to illustrate the invention.

Figure 1. Bioinformatics analysis of the wild type *Citrobacter koseri* endolysin CkP1gp131 using BLASTp and Pfam systems. The DNA and amino acid sequences as they appear in the wild type phage are A) SEQ ID No. 2 and B) SEQ ID No. 1, respectively. The catalytic domain of the lysozyme-like superfamily (amino acids 1– 163, SEQ ID No. 3, underlined) is visualized in the scheme (Fig.1 C) and the sequences (Fig. 1 A and B; underline).

Figure 2. Antibacterial activity of CkP1gp131 against several Gram-negative bacterial pathogens. Exponentially growing cells (≈$3x10^7$ CFU/ml) were incubated for 2 hours and at 37°C, with 50 µg/ml (2.4 µM) of CkP1gp131 resuspended in 20 mM HEPES pH 7.0 or with HEPES as a negative control. After incubation, the antibacterial effect was assessed by quantification of the number of CFUs and expressed as relative inactivation in logarithmic units (= log10 (N_0/N_i) with N_0 = number of untreated cells and N_i = number of cells after treatment). Averages ± standard deviations are given for n = 3 repeats. CK – *Citrobacter*

CLAIMS

1. A polypeptide comprising an amino acid sequence according to SEQ ID No. 1 or a fragment or derivative thereof.

2. The polypeptide according to claim 1, wherein the fragment comprises an amino acid sequence according to SEQ ID No. 3.

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, 3, 5, 6 and/or 7.

4. The polypeptide according to claims 1 to 3, wherein the polypeptide is fused at the N- or C-terminus to a peptide stretch having membrane or LPS disrupting activity.

5. The polypeptide according to any one of the preceding claims comprising additionally a tag, preferably a His6-tag.

6. The polypeptide according to any one of the preceding claims, wherein the polypeptide has endolysin activity.

7. An isolated nucleic acid molecule encoding a polypeptide according to any one of claims 1 to 6.

8. A vector comprising the nucleic acid molecule according to claim 7.

9. A host cell comprising the nucleic acid molecule according to claim 7 or the vector according to claim 8.

10. The polypeptide according to any one of claims 1 to 6 for use in a method of treating the human or animal body by surgery or therapy and diagnostic methods practised on the human or animal body.

11. Use of an polypeptide according to any one of claims 1 to 6 as an antimicrobial in food, feed or in cosmetics, or as a disinfecting agent.

12. Use of the polypeptide according to any one of claims 1 to 6 in the manufacture of a medicament for treatment or prevention of Gram-negative bacterial infections.

13. Use of the polypeptide according to any one of claims 1 to 6 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 feed, of feed processing equipment, of feed processing plants, of surfaces coming into contact with feed, of medical devices, of surfaces in hospitals and doctor's offices.