

Claims

1. A nucleic acid encoding a synthetic fusion protein and comprising at least one of: a sequence of SEQ ID no 3, a sequence having at least 90% sequence identity with SEQ ID no. 3 and a sequence having at least 95% identity with SEQ ID no. 3.
- 5 2. A vector, preferably an expression vector, comprising the nucleic acid according to claim 1.
3. Vector according to claim 2 wherein the nucleic acid is operably linked to a promoter sequence.
4. A synthetic fusion protein having amino acid sequence of SEQ ID 4.
- 10 5. A synthetic fusion protein having amino acid sequence with at least 90% and more preferably 95% sequence identity with SEQ ID no.4.
6. A composition comprising the protein according to one of claims 4 and/or 5.
7. A composition according to claim 6 wherein the protein is packaged in lipid carriers, preferably single and multi-lamellar liposomes.
- 15 8. Composition according to one of claims 6 or 7 further comprising at least one of cosmetically and/or pharmaceutically acceptable adjuvants and carriers.
9. Composition according to one of claims 6 to 8 further comprising at least one of saline buffer preferably PBS, protease inhibitor, MgCl₂, pharmaceutically acceptable excipients, pharmaceutically acceptable carriers, pharmaceutically acceptable thickeners and gelling agents, pharmaceutically acceptable carriers preferably lipid even more preferably liposomes, pharmaceutically acceptable adjuvants, cellulose preferably methylcellulose.
- 20 10. Composition according to one of claims 6 to 9 formulated in spray, semi-liquid, creamy, semi-solid, solid, cream, suspension, milk, or gel form.
11. A composition comprising the protein according to one of claims 4 or 5 and a lysate of bacterial or fungal cells, preferably of *pichia pastoris* or *bacillus subtilis*.
- 25 12. Nucleic acid, vector, protein or compositions according to any one of claims 1 to 11 for use in the medical and/or veterinary field.
13. Nucleic acid, carrier, protein or compositions according to any one of claims 1 to 11 for use in the treatment of viral, bacterial, fungal or mycoplasmic infections, preferably *Staphylococcus aureus* or Sars-Cov2 infections.
- 30 14. Nucleic acid, carrier, protein or compositions according to any one of claims 1 to 11 for use in the treatment of viral, bacterial, fungal or mycoplasmic infections in which said nucleic acid, vector, protein or compositions are administered topically .
15. A protein or compositions according to any one of claims 3 to 11 for use as a medicament defined by its disinfectant, antibacterial, antifungal, antifungal and/or antiviral function.
- 35 16. Process for the production of a protein according to claim 4 or 5 comprising the following basic steps:

- I. In an expression vector, comprising a selection marker, insert a nucleic acid comprising at least one of: a sequence of SEQ ID no 3, a sequence having at least 90% sequence identity with SEQ ID no. 3 and a sequence having at least 95% identity with SEQ ID no. 3;
- 5 II. using said vector for the transformation of competent cells suitable for the use of said vector;
- III. select the competent cells transformed with said vector and multiply them in culture;
- IV. perform a lysis of the competent cells of point III;
- V. selecting and purifying the protein according to claim 4 or 5 from the lysate obtained in
10 point IV.
17. Process according to claim 16 comprising a further step of encapsulating the protein obtained at point V in lipids, preferably phospholipids.
18. Process according to one of claims 16 or 17 comprising a further freeze-drying step.