not only by the target bacterial cells but possibly also by other pathogenic bacteria. Furthermore, conventional, systemic antibiotic treatment can interact with other drugs, including contraceptive pills. Certain antibiotics cannot be combined with the use of alcohol. Accordingly, there is a need for improved treatment of eczema.

Summary

In one aspect, there is provided a composition comprising a first and a second compound, wherein said first compound is an anti-inflammatory compound selected from the group consisting of a corticosteroid, FK506, tacrolimus, pimecrolimus, omalizumab, a recombinant human IFN-gamma, a microbial probiotic, a soluble IL-4 receptor, an anti–IL-5 monoclonal antibody a TNF inhibitor, a chemokine receptor antagonist and a CLA inhibitor, alefacept and efalizumab and said second compound is a compound specifically targeting a bacterial cell, and wherein said second compound comprises;

- at least one cell wall binding domain specifically binding the peptidoglycan cell wall of said bacterial cell; and

- one or more enzymatic active domains exhibiting target bond specificity,

and wherein said second compound is a polypeptide that has at least 80% identity with SEQ ID NO: SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 98 or 100; and/or said cell wall binding domain has at least 80% identity to any of SEQ ID NO: 4, 6 or 8; and/or wherein said one or more enzymatic active domains has at least 80% identity to any of SEQ ID NO: 10, 12, 14, 16, 18, 98 or 100.

In another aspect there is provided a kit of parts comprising: a) a first vial containing a first mixture comprising a first compound as defined herein; and b) a second vial containing a second mixture comprising a second compound as defined herein; and optionally, c) instructions for use.

In an embodiment, there is provided a composition as defined herein and/or a kit of parts as defined herein, for use as a medicament, comprising the administration of the composition and/or the sequential or simultaneous administration of a first and second compound of a kit of parts as disclosed above.

In another aspect, there is provided the use of a composition as defined herein and/or a kit of parts as defined herein in the manufacture of a medicament, for preventing, delaying and/or curing of dermatitis or eczema.

Description of the invention

In a first aspect, the present invention provides for a novel composition comprising a first and a second compound, wherein said first compound is an anti-inflammatory compound and said second compound is a compound specifically targeting a bacterial cell, preferably a gram positive bacterial cell. Preferably, said gram positive bacterial cell is a *Staphylococcus*, more preferably a *Staphylococcus aureus*. Preferably, said composition is a medicament preferably for use in the treatment of eczema, most preferably for use in the treatment of atopic dermatitis, as further detailed herein. The state of the art for treating eczema is using immunosuppressive agents like corticosteroids and if indicated antibiotics topical or systemic. The present invention provides for a novel composition comprising both an anti-inflammatory compound and a compound specifically targeting a bacterial cell, preferably a gram positive bacterial cell, preferably a *Staphylococcus aureus*, which combats most, if not all, of the disadvantages of using either an effective dosage regime of a corticosteroid and/or a conventional antibiotic alone or in combination and provides a unexpected synergy. In comparison to the use of an immunosuppressive agent alone like a corticosteroid alone, a composition of the invention decreases the risk and/or is more effective by combating eczema-related and/or corticosteroid induced infections induced by a bacterial cell, such as a gram positive bacterial cell, preferably *Staphylococcus aureus*. Furthermore, in comparison to the use of a corticosteroid alone, a composition according to the invention may be as effective as using a corticosteroid alone while making use of a lower dosage and/or a shorter administration regimen resulting in a shorter exposure time of the corticosteroid thereby reducing possible side-effects like the risk of skin atrophy, hypothalamic-pituitary-adrenal axis suppression (HPA axis suppression) and/or (increased) skin infection.

In comparison to the use of a corticosteroid in combination with conventional antibiotics and/or conventional antibiotics alone, the composition of the present invention selectively specifically targets a bacterial cell, preferably a gram positive

Claims

1. A composition comprising a first and a second compound, wherein said first compound is an anti-inflammatory compound selected from the group consisting of a corticosteroid, FK506, tacrolimus, pimecrolimus, omalizumab, a recombinant human IFN-gamma, a microbial probiotic, a soluble IL-4 receptor, an anti–IL-5 monoclonal antibody, a TNF inhibitor, a chemokine receptor antagonist and a CLA inhibitor, alefacept and efalizumab and said second compound is a compound specifically targeting a bacterial cell, and wherein said second compound comprises;

- at least one cell wall binding domain specifically binding the peptidoglycan cell wall of said bacterial cell; and

- one or more enzymatic active domains exhibiting target bond specificity,

and wherein said second compound is a polypeptide that has at least 80% identity with SEQ ID NO: SEQ ID NO: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 98 or 100; and/or said cell wall binding domain has at least 80% identity to any of SEQ ID NO: 4, 6 or 8; and/or wherein said one or more enzymatic active domains has at least 80% identity to any of SEQ ID NO: 10, 12, 14, 16, 18, 98 or 100.

2. A composition according to claim 1, wherein the second compound is specifically targeting a gram positive bacterial cell.

3. A kit of parts comprising:

a) a first vial containing a first mixture comprising a first compound as defined in claim 1; and,

b) a second vial containing a second mixture comprising a second compound as defined in claim 1 or 2; and optionally,

c) instructions for use.

4. A kit of parts according to claim 3, wherein the instructions for use comprise a dosage regime.

5. Use of a composition according to claim 1 or 2 and/or a kit of parts according to claim 3 or 4, in the manufacture of a medicament for preventing, delaying and/or curing of dermatitis or eczema.

6. A composition and/or kit of parts according to claim 5, wherein said target bond is an essential bond in a peptidoglycan layer of said bacterial cell.

7. A composition and/or kit of parts according to claim 6, wherein said bacterial cell is a gram positive bacterial cell.

8. A composition and/or kit of parts according to any one of claims 6 to 7, wherein said one or more enzymatic active domains is selected from or is a combination of a domain of the group consisting of a cysteine, histidine dependent amidohydrolases/peptidase domain, an endopeptidase domain, an amidase domain and a glycosylhydrolase domain.

9. A composition and/or kit of parts according to any of the preceding claims, wherein said bacterial cell is a gram positive bacterial cell.

10. A composition and/or kit of parts according to claim 9, wherein said gram positive bacterial cell is a *Staphylococcus*.

11. A composition and/or kit of parts according to claim 9 or 10, wherein said cell wall binding domain originates from or is a homologue of a *Staphylococcus* phage endolysin and/or an *S. simulans* lysostaphin and/or an *S. capitis* ALE-1 bacteriocin.

12. A composition and/or kit of parts according to any of the preceding claims, wherein said second compound is a naturally occurring or mutant bacteriophage, a naturally occurring endolysin or a mutant polypeptide.

13. A composition and/or kit of parts according to any one of claims 9 to 12, wherein said second compound is a recombinant polypeptide comprising a multiplicity of one or more enzymatic active domains exhibiting target bond specificity.