Claims

1. A peptide or a composition thereof for use in the treatment of an infection associated with a Type III Secretion System pathogen or ~~an~~ a quorum sensing antibiotic resistant pathogen, wherein the peptide comprises an amino acid sequence of $X_1X_2$[L or I]PPK; $X_1$ is selected from N, C, Q, M, S and T; and $X_2$ ~~independently designate a hydrophobic amino acid; and~~ is selected from A, I, L and V; wherein the peptide has fewer than 19 amino acid residues and wherein the peptide is derived from a probiotic bacteria.

~~2. A peptide or a composition thereof for use according to claim 1, wherein $X_1$ is selected from N, C, Q, M, S, and T, and $X_2$ is selected from A, I, L, and V.~~

~~3~~2. ~~A~~ The peptide or ~~a~~ the composition thereof for use according to claim 1, wherein the peptide comprises the amino acid sequence of MALPPK.

~~4~~3. ~~A~~ The peptide or ~~a~~ the composition thereof for use according to claim 1, wherein the peptide consists of the amino acid sequence of MALPPK.

~~5~~4.. ~~A~~ The peptide or ~~a~~ the composition thereof for use according to claim 1, wherein the peptide comprises the amino acid sequence of CVLPPK.

~~6~~5. ~~A~~ The peptide or ~~a~~ the composition thereof for use according to claim 1, wherein the peptide consists of the amino acid sequence of CVLPPK.

~~7~~6. ~~A~~ The peptide or ~~a~~ the composition thereof for use according to any one of claims 1 to ~~6~~5, wherein the ~~peptide is derived from a~~ probiotic bacteria selected from Lactobacillus, Lactococcus, Streptococcus, Bifidobacterium, Pediococcus and any combination thereof, wherein the Lactobacillus is selected from Lactobacillus acidophilus (La-5), Lactobacillus fermentum, Lactobacillus rhamnosus, Lactobacillus reuteri, Lactobacillus helveticus, and Lactobacillus plantarum; the Lactococcus is Lactococcus lactis; the Bifidobacterium is selected from Bifidobacterium longum, Bifidobacterium bifidum, Bifidobacterium infantis and Bifidobacterium crudilactis and any mixture thereof; the Streptococcus is Streptococcus thermophiles; and the Enterococcus is Enterococcus faecium.

~~8~~7. ~~A~~ The peptide or ~~a~~ the composition thereof for use according to any one of claims 1 to ~~7~~6, wherein the composition further comprises an antibiotic, an antiviral, a sugar source,

an edible food product, a nutritional supplement, ingestible liquid, or any combination thereof.

~~9~~8. ~~A~~ The peptide or ~~a~~ the composition thereof for use according to any one of claims 1 to ~~8~~7, wherein the peptide is concentrated from a cell-free supernatant or fraction thereof.

~~10~~9. ~~A~~ The peptide or ~~a~~ the composition thereof for use according to any one of claims 1 to ~~9~~8, wherein the peptide is in the form of a dried culture fraction, the dried culture fraction being a lyophilized culture fraction or a spray-dried culture fraction.

~~11~~10. ~~A~~ The peptide or ~~a~~ the composition thereof for use according to claim ~~10~~9, wherein the dried culture fraction is a cell-free supernatant.

~~12~~11. ~~A~~ The peptide or ~~a~~ the composition thereof for use according to any one of claims 1 to ~~11~~10, wherein the composition is a food product, beverage product, health product, medicament, or nutritional supplement.

~~13~~12. ~~A~~The peptide or ~~a~~ the composition thereof for use according to any one of claims 1 to ~~12~~11, wherein the composition further comprises any one or a combination of a live probiotic bacteria from which the peptide is derived and a live probiotic bacteria other than the bacteria from which the peptide is derived.

~~14~~13. ~~A~~ The peptide or ~~a~~ the composition thereof for use according to any one of claims 1 to ~~13~~12, wherein the peptides in the composition are purified.

~~15~~14. ~~A~~ The peptide or ~~a~~ the composition thereof for use according to any one of claims 1 to ~~14~~13, wherein the infection associated with the Type III Secretion System pathogen is urinary tract infection.

~~16~~15. ~~A~~ The peptide or ~~a~~ the composition thereof for use according to any one of claims 1 to ~~15~~14, wherein the Type III Secretion System pathogen is uropathogenic *Escherichia coli*.

~~17~~16. ~~A~~ The peptide or ~~a~~ the composition thereof for use according to any one of claims 1 to ~~14~~13, wherein the infection associated with the antibiotic resistant pathogen is methicillin-resistant Staphylococci infection.

~~18~~17. Use of ~~a~~ the peptide or ~~a~~ the composition thereof in the manufacture of a medical device for the treatment of an infection associated with a Type III Secretion System pathogen or ~~an~~ a quorum sensing antibiotic resistant pathogen, wherein the peptide comprises an amino acid sequence of $X_1X_2$[L or I]PPK; $X_1$ is selected from N, C, Q, M, S and T, and $X_2$ is selected from A, I, L and V ~~independently designate a hydrophobic amino acid~~; the peptide has fewer than 19 amino acid residues; and the medical device is a stent, catheter, or wound dressing comprising the peptide or the composition, which is to be released from the inert object over a period of time.

~~19. Use according to claim 18, wherein $X_1$ is selected from N, C, Q, M, S, and T, and $X_2$ is selected from A, I, L, and V.~~

~~20~~18. Use according to claim ~~18~~17, wherein the peptide comprises the amino acid sequence of MALPPK.

~~21~~19. Use according to claim ~~18~~17, wherein the peptide consists of the amino acid sequence of MALPPK.

~~22~~20. Use according to claim ~~18~~17, wherein the peptide comprises the amino acid sequence of CVLPPK.

~~23~~21. Use according to claim ~~18~~17, wherein the peptide consists of the amino acid sequence of CVLPPK.

~~24~~22. Use according to any one of claims ~~18~~ 17 to ~~23~~21, wherein the peptide is derived from a probiotic bacteria selected from Lactobacillus, Lactococcus, Streptococcus, Bifidobacterium, Pediococcus and any combination thereof, wherein the Lactobacillus is selected from Lactobacillus acidophilus (La-5), Lactobacillus fermentum, Lactobacillus rhamnosus, Lactobacillus reuteri, Lactobacillus helveticus, and Lactobacillus plantarum; the Lactococcus is Lactococcus lactis; the Bifidobacterium is selected from Bifidobacterium longum, Bifidobacterium bifidum, Bifidobacterium infantis and Bifidobacterium crudilactis and any mixture thereof; the Streptococcus is Streptococcus thermophiles; and the Enterococcus is Enterococcus faecium.

~~25~~23. Use according to any one of claims ~~18~~ 17 to ~~24~~22, wherein the composition further comprises an antibiotic, an antiviral, a sugar source, an edible food product, a nutritional supplement, ingestible liquid, or any combination thereof.

~~26~~24. Use according to any one of claims ~~18~~ 17 to ~~25~~23, wherein the peptide is concentrated from a cell-free supernatant or fraction thereof.

~~27~~25. Use according to any one of claims ~~18~~ 17 to ~~26~~24, wherein the peptide is in the form of a dried culture fraction, the dried culture fraction being a lyophilized culture fraction or a spray-dried culture fraction.

~~28~~26. Use according to claim ~~27~~25, wherein the dried culture fraction is a cell-free supernatant.

~~29~~27. Use according to any one of claims ~~18~~ 17 to ~~28~~26, wherein the composition is a food product, beverage product, health product, medicament, or nutritional supplement.

~~30~~28. Use according to any one of claims ~~18~~ 17 to ~~29~~27, wherein the composition further comprises any one or a combination of a live probiotic bacteria from which the peptide is derived and a live probiotic bacteria other than the bacteria from which the peptide is derived.

~~31~~29. Use according to any one of claims ~~18~~ 17 to ~~30~~28, wherein the peptides in the composition are purified.

~~32~~30. Use according to any one of claims ~~18~~ 17 to ~~31~~29, wherein the infection associated with the Type III Secretion System pathogen is a urinary tract infection.

~~33~~31. Use according to any one of claims ~~18~~ 17 to ~~32~~30, wherein the Type III Secretion System pathogen is uropathogenic *Escherichia coli*.

~~34~~32. Use according to any one of claims ~~18~~ 17 to ~~31~~29, wherein the infection associated with the antibiotic resistant pathogen is methicillin-resistant Staphylococci infection.