CLAIMS

1. A *Streptomyces clavuligerus* comprising two point mutations in a *ccaR* promoter region and a substitution mutation in a *ccaR* gene, wherein the point mutations in the *ccaR* promoter region are a C to T point mutation at a site corresponding to position 48 of SEQ ID NO:1 and a G to A point mutation at a site corresponding to position 143 of SEQ ID NO:1; and wherein the substitution mutation in the *ccaR* gene is an arginine to tryptophan substitution at a site corresponding to position 32 of SEQ ID NO: 2.

2. The *Streptomyces clavuligerus* according to claim 1, wherein the arginine to tryptophan substitution is a result of a C to T point mutation at a site corresponding to position 344 of SEQ ID NO: 1.

3. The *Streptomyces clavuligerus* according to claim 1 or 2, comprising a nucleic acid sequence of SEQ ID NO:3.

4. The *Streptomyces clavuligerus* according to any preceding claim, capable of producing a titre of 0.5 g/L or more, 1 g/L or more, 1.5 g/L or more, 2 g/L or more or 2.5 g/L or more of clavulanic acid.

5. The *Streptomyces clavuligerus* according to any preceding claim, capable of producing a titre of 2.1 g/L or more of clavulanic acid.

6. The *Streptomyces clavuligerus* according to claim 4 or 5, wherein said titre of clavulanic acid is produced after 65 hours of fermentation.

7. The *Streptomyces clavuligerus* according to any one of claims 1 to 6, capable of producing a titre of 100% or more, 200% or more, 300% or more, 400% or more, 500% or more, 600% or more, 700% or more, 800% or more, 900% or more, or 1000% or more of clavulanic acid after 65 hours of fermentation as compared to wild-type (WT) *Streptomyces clavuligerus*.

8. The *Streptomyces clavuligerus* according to any one of claims 1 to 6, capable of producing a titre of 1000% or more of clavulanic acid after 65 hours of fermentation as compared to WT *Streptomyces clavuligerus*.

9. The *Streptomyces clavuligerus* according to any preceding claim, capable of reducing viscosity of a fermentation broth by 10% or more, 15% or more, 20% or more, 25% or more, 30% or more, 35% or more, or 40% or more after 65 hours of fermentation as compared to wild-type (WT) *Streptomyces clavuligerus*.

10. The *Streptomyces clavuligerus* according to claim 9, capable of reducing viscosity of a fermentation broth by 40% or more after 65 hours of fermentation as compared to WT *Streptomyces clavuligerus*.

11. A *Streptomyces clavuligerus* according to any preceding claim for use in the production of clavulanic acid.

12. A vector comprising nucleic acid sequences comprising a *ccaR* promoter region comprising two point mutations and a *ccaR* gene comprising a substitution mutation, wherein the point mutations in the *ccaR* gene promoter region are a C to T mutation at a site corresponding to position 48 of SEQ ID NO:1 and a G to A mutation at a site corresponding to position 143 of SEQ ID NO:1; and wherein the substitution mutation in the *ccaR* gene is an arginine to tryptophan substitution at a site corresponding to 32 of SEQ ID NO: 2.

13. The vector according to claim 12, wherein the arginine to tryptophan substitution is a result of a C to T point mutation at a site corresponding to position 344 of SEQ ID NO: 1.

14. The vector according to claim 12 or 13 comprising a nucleic acid sequence of SEQ ID NO: 3.

15. The vector of any one of claims 12 to 14 for use in producing a *Streptomyces clavuligerus* of any one of claims 1 to 10.

16. A method for producing clavulanic acid comprising the steps of

    growing a *Streptomyces clavuligerus* of any one of claims 1 to 10; and

    recovering clavulanic acid produced by said *Streptomyces clavuligerus*, or progeny thereof.

17. The method according to claim 16, wherein a titre of 0.5 g/L or more, 1 g/L or more, 1.5 g/L or more, 2 g/L or more or 2.5 g/L or more of clavulanic acid is produced.

18. The method according to claim 16, wherein a titre of 2.1 g/L or more of clavulanic acid is produced.

19. The method according to claim 17 or 18, wherein said titre of clavulanic acid is produced after 65 hours of fermentation.

20. The method according to any one of claims 16 to 19, wherein a titre of 100% or more, 200% or more, 300% or more, 400% or more, 500% or more, 600% or more, 700% or more, 800% or more, 900% or more, or 1000% or more of clavulanic acid is produced after 65 hours of fermentation as compared to wild-type (WT) *Streptomyces clavuligerus*.

21. The method according to any one of claims 16 to 20, wherein a titre of 1000% or more of clavulanic acid is produced after 65 hours of fermentation as compared to WT *Streptomyces clavuligerus*.

22. The method according to any one of claims 16 to 21, wherein viscosity of a fermentation broth comprising said *Streptomyces clavuligerus* is reduced by 10% or more, 15% or more, 20% or more, 25% or more, 30% or more, 35% or more, or 40% or more after 65 hours of fermentation as compared to WT *Streptomyces clavuligerus*.

23. The method according to claim 22, wherein viscosity of the fermentation broth comprising said *Streptomyces clavuligerus* is reduced by 40% or more after 65 hours of fermentation as compared to WT *Streptomyces clavuligerus*.

24. A method for producing a pharmaceutical formulation comprising a β-lactam antibiotic and clavulanic acid comprising the steps of

(a) growing a *Streptomyces clavuligerus* of any one of claims 1 to 10;

(b) recovering clavulanic acid produced by said *Streptomyces clavuligerus*, or progeny thereof; and

(c) preparing the pharmaceutical formulation by combining the clavulanic acid recovered in step (b) with the β-lactam antibiotic.

25. The method according to claim 24, wherein the β-lactam antibiotic is amoxicillin.