CLAIMS

1. A modified fusion protein comprising
(i) an L-asparaginase comprising the amino acid sequence of SEQ ID NO: 1, and
(ii) one or more polypeptides, wherein the one or more polypeptides comprises the amino acid sequence of SEQ ID NO: 7 or 9.

2. The modified fusion protein according to claim 1, wherein said L-asparaginase consists of the amino acid sequence of SEQ ID NO:1.

3. The modified fusion protein according to claim 1, wherein the modified protein is a fusion protein of the L-asparaginase and the one or more polypetides.

4. The modified fusion protein according to claim 3, wherein the one or more polypeptides consist of 200 to 600 proline and alanine amino acid residues.

5. The modified protein according to claim 3, wherein the one or more polypeptides consist of 200 to 400 proline and alanine amino acid residues, and the proline amino acid residues constitute more than 10% and less than 70% of the polypeptide.

6. The modified fusion protein according to claim 3, wherein at least one of the one or more polypeptides comprises the amino acid sequence of SEQ ID NO: 7.

7. The modified fusion protein according to claim 3, wherein at least one of the one or more polypeptides comprises the amino acid sequence of SEQ ID NO:9.

8. The modified fusion protein according to claim 3, wherein the fusion protein comprises the amino acid sequence of SEQ ID NO: 11.

9. The modified fusion protein according to claim 3, wherein the fusion protein comprises the amino acid sequence of SEQ ID NO: 13.

10. The modified fusion protein according to claim 3, wherein the L-asparaginase comprises the amino acid sequence of SEQ ID NO: 1 and the polypeptide consists of the amino acid sequence of SEQ ID NO: 7, or 9.

11. The modified fusion protein according to claim 2, wherein at least one of the one or

more polypeptides consists of the amino acid sequence of SEQ ID NO: 7.

12. The modified fusion protein according to claim 2, wherein at least one of the one or more polypeptides consists of the amino acid sequence of SEQ ID NO: 9.

13. The modified fusion protein according to claim 3, wherein the L-asparaginase is composed of four subunits.

14. The modified fusion protein according to claim 3, wherein the fusion protein consists of the amino acid sequence of SEQ ID NO: 11 or 13.

15. A pharmaceutical composition comprising the modified fusion protein according to claim 1 and one or more pharmaceutical acceptable carriers or excipients.

16. The pharmaceutical composition of claim 15, wherein the one or more polypeptides is present in an amount sufficient to mediate a decreased immunogenicity of the modified protein following administration to a human subject.

17. The pharmaceutical composition of claim 15, wherein the one or more polypeptides is present in an amount sufficient to increase the plasma half-life of the L-asparaginase following administration to a human subject.