Claims

1. A conjugate suitable for use in vaccine comprising a fragmented Vi polysaccharide and a carrier protein selected from CRM_{197} or diphtheria toxoid, wherein the fragmented polysaccharide has an average molecular weight of between 40 and 55 kDa.

2. A conjugate according to claim 1, wherein the fragmented polysaccharide has an average molecular weight of between 41 and 49 kDa.

3. A conjugate according to claim 1, wherein the fragmented polysaccharide has an average molecular weight of 51 to 55 kDa.

4. A conjugate according to any of the preceding claims, wherein the carrier protein is CRM_{197}.

5. A pharmaceutical composition comprising the conjugate of any of claims 1 or 2 in combination with a pharmaceutically acceptable carrier.

6. A pharmaceutical composition according to claim 3, wherein the composition is unadjuvanted.

7. A pharmaceutical composition according to claim 3, wherein the composition comprises an adjuvant.

8. ~~A method for raising an immune response in a mammal, comprising administering~~ Use of the conjugate or the pharmaceutical composition of any of claims 1 to 7 ~~to said mammal~~in the manufacture of a medicament for raising an immune response in a mammal.

9. ~~A method for raising a T-dependent immune response essentially free of a T-independent immune response in a mammal, comprising administering~~Use of the conjugate or the pharmaceutical composition of any of claims 1 to 7 ~~to said mammal~~in the manufacture of a medicament for raising a T-dependent immune response.

10. Use of a conjugate or pharmaceutical composition according to any of claims 1 to 7 in the manufacture of a vaccine for the prevention of disease.

11. ~~A method for the prevention of typhoid fever in a subject comprising administering~~Use of the conjugate or the pharmaceutical composition according to any of claims 1 to 7 ~~to a subject in need thereof~~in the manufacture of a medicament for the prevention of typhoid fever in a subject.

12. A method for manufacturing a conjugate comprising fragmented Vi polysaccharide and a carrier protein selected from CRM_{197} or diphtheria toxin comprising the steps of:
    a. Fragmenting Vi polysaccharide to obtain a fragmented Vi polysaccharide having an average molecular weight of 40 to 55 kDa
    b. Reacting the fragmented Vi polysaccharide obtained in step a) with a carbodiimide and N-hydroxysuccinimide at a pH of 5 to 6 to form an N-hydroxysuccinimide ester
    c. Reacting the N-hydroxysuccinimide ester Vi derivative obtained in step b) with the carrier protein to produce a conjugate.

13. A method according to claim 12, wherein the carrier protein is CRM_{197}.

14. A conjugate suitable for use in vaccine obtainable by a method according to any of claims 10 or 11.

15. Use of fragmented Vi polysaccharide having an average molecular weight of 40 to 55kDa and a carrier protein selected from CRM_{197} or diphtheria toxoid in the manufacture of a conjugate vaccine.