Claims:

1. An immunogenic composition comprising 4-400 μg recombinant PCV2 ORF2 protein, for use in lessening the severity of clinical symptoms associated with PCV2 infection wherein said immunogenic composition is to be administered once in one dose to a pig, or a one dose immunogenic composition that comprises 4-400 μg recombinant PCV2 ORF2 protein and that is effective for lessening the severity of clinical symptoms associated with PCV2 infection in a pig when administered once.

2. The immunogenic composition of claim 1, for use in lessening the severity of clinical symptoms associated with PCV2 infection by administering one dose of said composition to a pig.

3. The immunogenic composition of claim 1 or 2, wherein said recombinant PCV2 ORF2 protein is obtainable by permitting infection of susceptible cells in culture with a recombinant viral vector containing PCV2 ORF2 DNA coding sequences, wherein ORF2 protein is expressed by the recombinant viral vector, and thereafter recovering said ORF2 in the supernate.

4. The immunogenic composition of any one of claims 1 to 3, wherein said recombinant PCV2 ORF2 protein is recombinant baculovirus expressed PCV2 ORF2 protein.

5. The immunogenic composition of claim 4, wherein said immunogenic composition comprises inactivated baculovirus and cell culture supernate.

6. The immunogenic composition of any one of claims 3 to 5, wherein said viral vector is inactivated by addition of BEI.

7. The immunogenic composition of claim 6, wherein said BEI is neutralized with sodium thiosulfate.

8. The immunogenic composition of any one of claims 1 to 7, wherein said immunogenic composition comprises an adjuvant.

9. The immunogenic composition of claim 8, wherein said adjuvant is selected from the group consisting of polymers of acrylic acid or polymers of methacrylic acid.

10. The immunogenic composition of claim 8 or 9, wherein said adjuvant is a carbomer, preferably a Carbopol.

11. The immunogenic composition of any one of claims 8 to 10, wherein said adjuvant comprises 500 μg to 5 mg Carbopol per dose.

12. The immunogenic composition of any one of claims 1 to 11, wherein said immunogenic composition comprises 4 μg to 200 μg recombinant PCV2 ORF2 protein per dose.

13. The immunogenic composition of any one of claims 1 to 12, wherein said immunogenic composition is effective in the prevention of an infection with PCV2.

14. The immunogenic composition of any one of claims 1 to 13 for use in a method for the prevention of an infection with PCV-2.

15. The immunogenic composition of any one of claims 1 to 14, wherein said immunogenic composition is to be administered together with an immunogenic composition that comprises Porcine Reproductive and Respiratory Syndrome (PRRS) antigen.

16. The immunogenic composition of claim 15, wherein said immunogenic composition is effective in the prevention of PCV2 clinical signs and disease manifestations when a PRRS infection is present.

17. The immunogenic composition of claim 15 or 16, for use in a method for the prevention of PCV2 clinical signs and disease manifestations when a PRRS infection is present.

18. The immunogenic composition of any one of claims 1 to 17, wherein said immunogenic composition is effective for inducing an immune response against

PCV2.

19. The immunogenic composition of any one of claims 1 to 18, wherein said immunogenic composition is in a container.

20. Use of an immunogenic composition that comprises 4-400 μg recombinant PCV2 ORF2 protein for the preparation of a medicament to be administered once in one dose to a pig for lessening the severity of clinical symptoms associated with PCV2 infection.

21. The use of claim 20, wherein said recombinant PCV2 ORF2 protein is obtainable by permitting infection of susceptible cells in culture with a recombinant viral vector containing PCV2 ORF2 DNA coding sequences, wherein ORF2 protein is expressed by the recombinant viral vector, and thereafter recovering said ORF2 in the supernate.

22. The use of claim 20 or 21, wherein said recombinant PCV2 ORF2 protein is recombinant baculovirus expressed PCV2 ORF2 protein.

23. The use of any one of claims 20 to 22, wherein said immunogenic composition comprises inactivated baculovirus and cell culture supernate.

24. The use of any one of claims 21 to 23, wherein said viral vector in said immunogenic composition that comprises recombinant PCV2 ORF2 protein is inactivated by addition of BEI.

25. The use of claim 24, wherein said BEI is neutralized with sodium thiosulfate.

26. The use of any one of claims 22 to 25, wherein said medicament or immunogenic composition that comprises recombinant PCV2 ORF2 protein comprises an adjuvant.

27. The use of claim 26, wherein said adjuvant is selected from the group consisting of polymers of acrylic acid or polymers of methacrylic acid.

28. The use of claim 26 or 27, wherein said adjuvant is a carbomer, preferably a

Carbopol.

29. The use of any one of claims 26 to 28, wherein said adjuvant comprises 500 μg to 5 mg Carbopol per dose.

30. The use of any one of claims 20 to 29, wherein said immunogenic composition that comprises recombinant PCV2 ORF2 protein comprises 4 μg to 200 μg recombinant PCV2 ORF2 protein per dose.

31. The use of any one of claims 20 to 30, wherein said medicament is to be administered in one dose to a pig for the prevention of an infection with PCV-2.

32. The use of any one of claims 20 to 31, wherein said medicament is to be administered together with an immunogenic composition that comprises Porcine Reproductive and Respiratory Syndrome (PRRS) antigen.

33. The use of claim 32, wherein said medicament is to be administered once in one dose to a pig for the prevention of PCV2 clinical signs and disease manifestations when a PRRS infection is present.

34. The use of any one of claims 20 to 33, wherein said medicament is to be administered in one dose to a pig for inducing an immune response against PCV2.

35. A vaccine comprising 4-400 μg recombinant PCV2 ORF2 protein, wherein said vaccine is for use in a method for effectively lessening the severity of clinical symptoms associated with PCV2 infection when administered once as one dose to a pig.

36. The vaccine of claim 35, wherein said vaccine comprises an adjuvant.

37. The vaccine of claim 35 or 36, wherein said adjuvant is selected from the group consisting of polymers of acrylic acid or polymers of methacrylic acid.

38. The vaccine of claim 36 or 37, wherein said adjuvant is a carbomer, preferably a

Carbopol.

39. The vaccine of any one of claims 36 to 38, wherein said adjuvant comprises 500 μg to 5 mg Carbopol per dose.

40. The vaccine of any one of claims 35 to 39, wherein said vaccine comprises 4 μg to 200 μg recombinant PCV2 ORF2 protein.

41. A kit comprising a container that comprises at least one dose of an immunogenic composition effective for lessening the severity of clinical symptoms associated with PCV2 infection when administered once in one dose to a pig, wherein one dose comprises 4-400 μg recombinant PCV2 ORF2 protein, said kit further comprising an instruction manual including the information for the intramuscular application of said one dose once of said immunogenic composition per piglet for lessening of the severity of clinical symptoms associated with PCV2 infection.

42. The kit of claim 41, wherein said recombinant PCV2 ORF2 protein is obtainable by permitting infection of susceptible cells in culture with a recombinant viral vector containing PCV2 ORF2 DNA coding sequences, wherein ORF2 protein is expressed by the recombinant viral vector, and thereafter recovering said ORF2 in the supernate.

43. The kit of claim 41 or 42, wherein said recombinant PCV2 ORF2 protein is recombinant baculovirus expressed PCV2 ORF2 protein.

44. The kit of claim 43, wherein said immunogenic composition comprises inactivated baculovirus and cell culture supernate.

45. The kit of any one of claims 42 to 44, wherein said viral vector is inactivated by addition of BEI.

46. The kit of claim 45, wherein said BEI is neutralized with sodium thiosulfate.

47. The kit of any one of claims 41 to 46, wherein said immunogenic composition comprises an adjuvant.

48. The kit of claim 47, wherein said adjuvant is selected from the group consisting of polymers of acrylic acid or polymers of methacrylic acid.

49. The kit of claim 47 or 48, wherein said adjuvant is a carbomer, preferably a Carbopol.

50. The kit of any one of claims 47 to 49, wherein said adjuvant comprises 500 µg to 5 mg Carbopol per dose.

51. The kit of claims 49 or 50, wherein said immunogenic composition comprises 4 µg to 200 µg recombinant PCV2 ORF2 protein per dose.

52. The kit of any one of claims 41 to 51, wherein said immunogenic composition is effective in the prevention of an infection with PCV-2.

53. The kit of any one of claims 41 to 52, wherein said immunogenic composition is to be administered together with an immunogenic composition that comprises Porcine Reproductive and Respiratory Syndrome (PRRS) antigen.

54. The kit of claim 53, wherein said immunogenic composition is effective in the prevention of PCV2 clinical signs and disease manifestations when a PRRS infection is present.

55. The kit of any one of claims 41 to 54, wherein said immunogenic composition is effective for inducing an immune response against PCV2.

56. The kit of any one of claims 41 to 55, wherein said immunogenic composition is a vaccine.

57. An immunogenic composition comprising 4-400 µg recombinant PCV2 ORF2 protein for use in inducing an immune response against PCV2 by the administration of only one dose of said immunogenic composition to a pig.

58. The immunogenic composition for use according to claim 57, wherein said recombinant PCV2 ORF2 protein is obtainable by permitting infection of susceptible

cells in culture with a recombinant viral vector containing PCV2 ORF2 DNA coding sequences, wherein ORF2 protein is expressed by the recombinant viral vector and thereafter recovering said ORF2 in the supernate.

59. The immunogenic composition for use according to claim 57 or 58, wherein said recombinant PCV2 ORF2 protein is a recombinant baculovirus expressed PCV2 ORF2 protein.

60. The immunogenic composition for use according to claim 59, wherein said immunogenic composition comprises inactivated baculovirus and cell culture supernate.

61. The immunogenic composition of any one for use according to claims 58 to 61, wherein said viral vector is inactivated by addition of BEI.

62. The immunogenic composition for use according to claim 61, wherein said BEI is neutralized with sodium thiosulfate.

63. The immunogenic composition for use according to any one of claims 57 to 63, wherein said immunogenic composition comprises an adjuvant.

64. The immunogenic composition for use according to claim 63, wherein said adjuvant is selected from the group consisting of polymers of acrylic acid or polymers of methacrylic acid.

65. The immunogenic composition for use according to claim 63 or 64, wherein said adjuvant is a carbomer, preferably a Carbopol.

66. The immunogenic composition for use according to any one of claims 63 to 65, wherein said adjuvant comprises 500 µg to 5 mg Carbopol per dose.

67. The immunogenic composition for use according to any one of claims 57 to 66, wherein said immunogenic composition comprises 4 µg to 200 µg recombinant PCV2 ORF2 protein per dose.

68. The immunogenic composition for use according to any one of claims 57 to 67, wherein said immunogenic composition is to be administered together with an immunogenic composition that comprises Porcine Reproductive and Respiratory Syndrome Virus (PRRS) antigen.

69. The immunogenic composition for use according to any one of claims 57 to 68, for use in the prevention of infections caused by PCV-2.

70. The immunogenic composition for use according to claims 68, or 69, wherein said immunogenic composition is effective in the prevention of PCV2 clinical signs and disease manifestations when a PRRS infection is present.

71. The immunogenic composition for use according to any one of claims 57 to 70, wherein said immune response is a protective immune response.

72. The immunogenic composition for use according to any one of claims 57 to 70, wherein said immune response is a therapeutic immune response.

73. The immunogenic composition for use according to any one of claims 57 to 72, wherein the immunological composition is effective for reducing or lessening the severity of the clinical symptoms associated with PCV2 infection when administered in one dose to a pig.

74. The immunogenic composition for use according to any one of claims 57 to 73, for use in reducing or lessening the severity of the clinical symptoms associated with PCV2 infection by the administration of one dose once to a pig.

75. The immunogenic composition for use according to claims 73 or 74, wherein the clinical symptoms are selected from the group consisting of gross lesions in pigs with PMWS secondary to PCV2 infection, PMWS, wasting, paleness of the skin, unthriftiness, respiratory distress, diarrhea, icterus, jaundice, microscopic and macroscopic lesions, lesions of lymphoid organs, mortality, and infections including pseudorabies, porcine reproductive and respiratory syndrome (PRRS), Glasser's disease, streptococcal meningitis, salmonellosis, postweaning colibacillosis, dietetic

hepatosis, and suppurative bronchopneumonia.

76. The immunogenic composition for use according to claim 75, wherein the gross lesions consist of generalized lymphadenopathy in combination with one or more of the following: (1) interstitial pneumonia with interlobular edema, (2) cutaneous pallor or icterus, (3) mottled atrophic livers, (4) gastric ulcers and (5) nephritis.

77. The immunogenic composition of any one of claims 68 to 76, wherein said immunogenic composition is in a container in a kit comprising an instruction manual including the information for the intramuscular application of one dose of the immunogenic composition of PCV2 ORF2 into piglets, and where said container in said kit also includes a Porcine Reproductive and Respiratory Syndrome antigen according to claim 69, said instruction manual further includes the information to administer the PCV2 ORF2 immunogenic composition together with the immunogenic composition that comprises said PRRS antigen.

78. Use of an immunogenic composition that comprises 4-400 μg recombinant PCV2 ORF2 protein for the preparation of a medicament to be administered once in one dose to a pig for inducing an immune response against PCV2.

79. A composition of matter comprising a protein expressed by open reading frame 2 (ORF2) of porcine circovirus type 2 (PCV2), wherein said protein is obtainable by permitting a virus transfected with a viral vector containing recombinant coding sequence for PCV2 ORF2 to infect cells in growth media, and recovering said protein in the supernate, rather than from inside the cells, or said protein is obtainable by permitting infection of susceptible cells in culture with a recombinant viral vector containing PCV2 ORF2 DNA coding sequences, wherein ORF2 protein is expressed by the recombinant virus, and recovering the ORF2 protein from the supernate, or said protein is obtainable by infecting cells in growth media with a recombinant viral vector containing PCV2 open reading frame 2 DNA coding sequences, causing the vector to express the recombinant ORF2 protein coding sequences, and recovering the expressed recombinant protein from the supernate, rather than from the cells.

Claims:

1. Use of a vaccine comprising 4 to 400 μg/dose recombinant PCV2 ORF2 protein for the manufacture of a medicament for use in a method of preventing PCV2 infection in a pig, wherein said method consists of the administration of one dose of said vaccine to said pig.

2. The use of claim 1, wherein said vaccine comprises an adjuvant.

3. The use of claim 1 or 2, wherein said adjuvant is selected from the group consisting of polymers of acrylic acid or polymers of methacrylic acid.

4. The use of claim 2 or 3, wherein said adjuvant is a carbomer, preferably a Carbopol.

5. The use of any one of claims 2 to 4, wherein said adjuvant comprises about 500 μg to about 5 mg Carbopol per dose.

6. The use of any one of claims 2 to 5, wherein said vaccine comprises 4 μg to 200 μg recombinant PCV2 ORF2 protein.