whether any of these clinical symptoms are in fact, the direct result of a PCV2 infection. Moreover, it is not yet known whether any of these clinical symptoms can be effectively reduced or cured by an active agent directed against PCV2.

Current approaches to treat PCV2 infections include DNA-based vaccines, such as those described in U.S. Patent No. 6,703,023. However, such vaccines have been ineffective at conferring protective immunity against PCV2 infection or reducing, lessening the severity of, or curing any clinical symptoms associated therewith. Moreover, vaccines described in the prior art were focused solely on the prevention of PCV2 infections in swine, but did not consider any further medical use.

Accordingly, what is needed in the art is an immunogenic composition for the treatment of several clinical manifestations. Further, what is needed in the art is an immunological composition which confers protective immunity against PCV2 infection but which can also be used to treat existing clinical symptoms associated with PCV2 infection.

DISCLOSURE OF THE INVENTION

The present ~~invention~~disclosure overcomes the problems inherent in the prior art and provides a distinct advance in the state of the art. The present ~~invention~~disclosure provides a medicinal use(s) of immunogenic composition(s) comprising PCV2 antigen.

In general no adverse events or injection site reactions were noted for any of the PCV2 antigen immunogenic compositions as used herein. Thus, the immunogenic compositions used herein appear to be safe when administered to young pigs, preferably to pigs not older than 15 weeks of age, more preferably not older than 6 weeks of age, even more preferably not older than 3 weeks, most preferably not older than 2 weeks. Alternatively, it is preferred that the administration of the immunogenic compositions of the

present ~~invention~~disclosure occur within at least 2 and preferably within at least 3 weeks of exposure to virulent PCV. According to a further embodiment, the immunogenic compositions used herein for any medicinal use described herein, is adminstered to pigs of 3 weeks of age or older, preferably of 2 weeks of age or older, most preferably but not older than 15 weeks of age.

Unexpectedly, it was found that the therapeutic use of the immunogenic compositions described below, is effective for lessening the severity of various clinical symptoms in swine. In particular, it was discovered that the therapeutic use of the immunogenic compositions of the present ~~invention~~disclosure, and specifically compositions comprising PCV2 ORF2 antigen, is effective for reducing or lessening lymphadenopathy, lymphoid depletion and/or multinucleated/giant histiocytes in swine infected with PCV2. Moreover, the therapeutic use of an antigenic composition, as provided herewith, and that comprises PCV2 antigen, preferably ORF2 antigen, reduces the overall circovirus load and its immunosuppressive impact, thereby resulting in a higher level of general disease resistance and a reduced incidence of PCV-2 associated diseases and symptoms.

In a first aspect, there is provided the use of an immunogenic composition capable of eliciting or enhancing an immune response against porcine circovirus type 2 (PCV) and comprising recombinantly produced PCV2 ORF2 protein in the manufacture of a medicament for preventing one or more of the following symptoms associated with PCV2 infection: nasal shedding, increased mortality rate, decreased average daily weight gain, wherein the PCV2 ORF2 protein is to be administered once to a pig.

Thus ~~one aspect of~~ the present ~~invention~~disclosure relates to the use of an immunogenic composition comprising PCV2 antigen, preferably recombinant PCV2 antigen, and more preferably PCV2 ORF2 protein as provided herewith, for the preparation of a medicament for the prevention, lessening and/or reduction of lymphadenopathy, lymphoid depletion and/or multinucleated/giant histiocytes in swine. Preferably, said medicament is effective for the prevention, lessening and/or reduction of lymphadenopathy, lymphoid depletion and/or multinucleated/giant histiocytes associated with PCV2 infections in swine. Still more preferably, said medicament is effective for the prevention, lessening and/or reduction of lymphadenopathy, lymphoid depletion and/or multinucleated/giant histiocytes associated with

PCV2 infections in pigs, when administered to pigs not older than 15 weeks of age, more preferably not older than 6 weeks of age, even more preferably not older than 3 weeks, and most preferably not older than 2 weeks. Alternatively, it is preferred that the administration of the immunogenic compositions of the present ~~invention~~disclosure occur within at least 2 and preferably within at least 3 weeks of exposure to virulent PCV.

T~~Another aspect of t~~he present ~~invention~~disclosure also relates to a method for the treatment of lymphadenopathy, lymphoid depletion and/or multinucleated/giant histiocytes in swine, comprising the administration of an immunogenic composition as provided herewith, to a pig, said immunogenic composition comprising a PCV2 antigen, preferably a recombinant PCV2 antigen, and morepreferably PCV2 ORF2 protein. T~~In yet another aspect, t~~he present ~~invention~~disclosure also provides a method for the treatment of lymphadenopathy, lymphoid depletion and/or multinucleated/giant histiocytes associated with a PCV2 infection in swine, comprising the administration of an immunogenic composition as provided herewith, to a pig, said immunogenic composition comprising a PCV2 antigen, preferably a recombinant PCV2 antigen and more preferably PCV2 ORF2 protein. Preferably, said treatment results in the lessening, reduction, prevention, and/or cure of the lymphadenopathy, lymphoid depletion and/or multinucleated/giant histiocytes in swine receiving said immunogenic composition. T~~According to a further aspect, said~~ methods for treatment may further comprise the administration of said immunogenic composition to pigs not older than 15 weeks of age, more preferably not older than 6 weeks of age, even more preferably not older than 3 weeks, and most preferably not older than 2 weeks. Alternatively, it is preferred that the administration of the immunogenic compositions of the present ~~invention~~disclosure occur within at least 2 and preferably within at least 3 weeks of exposure to virulent PCV.

It was further discovered that the therapeutic use of an immunogenic composition comprising PCV2 antigen, preferably a recominant PCV2 antigen, and most prefereably PCV2 ORF2 protein, as provided herewith, can reduce or lessen lymphadenopathy in combination with one or a multiple of the following symptoms in affected swine: (1) interstitial pneumonia with interlobular edema, (2) cutaneous pallor or icterus, (3) mottled atrophic livers, (4) gastric ulcers, (5) nephritis and (6) reproductive disorders, e.g. abortion, stillbirths, mummies, etc.

TThus one aspect of the present inventiondisclosure also relates to the use of an immunogenic composition comprising PCV2 antigen, preferably a recombinant PCV2 antigen and more preferably, PCV2 ORF2 protein as provided herewith, for the preparation of a medicament for the prevention, lessening and/or reduction of lymphadenopathy in combination with one or a multiple of the following symptoms in pigs: (1) interstitial pneumonia with interlobular edema, (2) cutaneous pallor or icterus, (3) mottled atrophic livers, (4) gastric ulcers, (5) nephritis and (6) reproductive disorders, e.g. abortion, stillbirths, mummies, etc., in pigs. Preferably, said medicament is effective for the prevention, lessening and/or reduction of lymphadenopathy in combination with one or a multiple of the following symptoms associated with PCV2 infection in pigs: (1) interstitial pneumonia with interlobular edema, (2) cutaneous pallor or icterus, (3) mottled atrophic livers, (4) gastric ulcers , (5) nephritis and (6) reproductive disorders, e.g. abortion, stillbirths, mummies, etc. TheAccording to a further aspect, said medicament may beis effective for the prevention, lessening and/or reduction of lymphadenopathy in combination with one or a multiple of the following symptoms in pigs: (1) interstitial pneumonia with interlobular edema, (2) cutaneous pallor or icterus, (3) mottled atrophic livers, (4) gastric ulcers , (5) nephritis and (6) reproductive disorders, e.g. abortion, stillbirths, mummies, etc., in pigs, when administered to pigs not older than 15 weeks of age,

more preferably not older than 6 weeks of age, even more preferably not older than 3 weeks, and most preferably not older than 2 weeks. Alternatively, it is preferred that the administration of the immunogenic compositions of the present ~~invention~~disclosure occur within at least 2 and preferably within at least 3 weeks of exposure to virulent PCV..

Moreover, the present ~~invention~~disclosure also relates to a method for the treatment of lymphadenopathy in combination with one or a multiple of the following symptoms in pigs: (1) interstitial pneumonia with interlobular edema, (2) cutaneous pallor or icterus, (3) mottled atrophic livers, (4) gastric ulcers , (5) nephritis and (6) reproductive disorders, e.g. abortion, stillbirths, mummies, etc., said method comprising the administration of an immunogenic composition comprising PCV2 antigen, preferably a recombinant PCV2 antigen, and more preferably PCV2 ORF2 protein as provided herewith. Preferably, the present ~~invention~~disclosure also relates to a method for the treatment of lymphadenopathy in combination with one or a multiple of the following symptoms associated with PCV2 infection in pigs: (1) interstitial pneumonia with interlobular edema, (2) cutaneous pallor or icterus, (3) mottled atrophic livers, (4) gastric ulcers, (5) nephritis and (6) reproductive disorders, e.g. abortion, stillbirths, mummies, etc., said method comprising the administration of an immunogenic composition comprising PCV2 antigen, prefereably recombinant PCV2 antigen and more preferably PCV2 ORF2 protein, as provided herewith, to a pig. Preferably, said treatment results in the lessening or reduction of the lymphadenopathy, and one or multiple of the following symptoms associated with PCV2 infection in pigs: (1) interstitial pneumonia with interlobular edema, (2) cutaneous pallor or icterus, (3) mottled atrophic livers, (4) gastric ulcers , (5) nephritis and (6) reproductive disorders, e.g. abortion, stillbirths, mummies, etc. The~~According to a further aspect, said~~ methods for treatment may further comprise administration of the immunogenic composition comprising PCV2 antigen, preferably recombinant PCV2

antigen and more preferably PCV2 ORF2 protein, as provided herein, to pigs not older than 15 weeks of age, more preferably not older than 6 weeks of age, even more preferably not older than 3 weeks, and most preferably not older than 2 weeks. Alternatively, it is preferred that the administration of the immunogenic compositions of the present ~~invention~~disclosure occur within at least 2 and preferably within at least 3 weeks of exposure to virulent PCV.

It was also unexpectedly found that the therapeutic use of an immunogenic composition comprising PCV antigen, preferably recombinant PCV2 antigen and more preferably PCV2 ORF2 protein as provided herewith, can also reduce or lessen Pia like lesions, normally known to be associated with Lawsonia intracellularis infections (Ileitis).

~~T~~Thus ~~one aspect of t~~he present ~~invention~~disclosure may relate~~s~~ to the use of an immunogenic composition comprising PCV2 antigen, preferably recombinant PCV2 antigen and more preferably PCV2 ORF2 protein as provided herewith, for the preparation of a medicament for the prevention, lessening the severity of and/or reduction of Pia like lesions, normally known to be associated with Lawsonia intracellularis infections in swine. The~~According to a further aspect, said~~ medicament may be~~is~~ effective for the prevention, lessening of the severity of and/or reduction of Pia like lesions, normally known to be associated with Lawsonia intracellularis infections, when administered to pigs not older than 15 weeks of age, more preferably not older than 6 weeks of age, even more preferably not older than 3 weeks, and most preferably not older than 2 weeks. Alternatively, it is preferred that the administration of the immunogenic compositions of the present ~~invention~~disclosure occur within at least 2 and preferably within at least 3 weeks of exposure to virulent PCV.

Moreover, the present ~~invention~~disclosure also relates to a method for the treatment of Pia like lesions, normally known to be associated with Lawsonia intracellularis infections, said method comprising the administration of an immunogenic composition comprising PCV2

antigen, preferably recombinant PCV2 antigen and more preferably PCV2 ORF2 protein as provided herein, to a pig. Preferably, said treatment results in the lessening or reduction of the Pia like lesions, normally known to be associated with Lawsonia intracellularis infections. ~~According to a further aspect, t~~The methods for treatment described above may further comprise the administration of the immunogenic composition comprising PCV2 antigen, preferably recombiant PCV2 antigen, and more preferably PCV2 ORF2 protein as provided herein, to pigs not older than 15 weeks of age, more preferably not older than 6 weeks of age, even more preferably not older than 3 weeks, and most preferably not older than 2 weeks. Alternatively, it is preferred that the administration of the immunogenic compositions of the present ~~invention~~disclosure occur within at least 2 and preferably within at least 3 weeks of exposure to virulent PCV.

The immunogenic composition

The immunogenic composition as used herein is effective for inducing an immune response against PCV2 and preventing, reducing and/or lessening the severity of the clinical symptoms associated with PCV2 infection. The composition generally comprises at least one PCV2 antigen.

Unless defined otherwise, all technical and scientific terms used herein have the same meanings as commonly understood by one of ordinary skill in the art to which this invention belongs. The term "immunogenic composition" as used herein refers to any pharmaceutical composition containing a PCV2 antigen, which composition can be used to prevent or treat a PCV2 infection-associated disease or condition in a subject. A preferred immunogenic composition can induce, stimulate or enhance the immune response against PCV2. The term