CLAIMS

1. A monoclonal antibody directed against the influenza A virus hemagglutinin antigen, characterized in that is capable of binding a plurality of subtypes of the influenza A virus.

2. A monoclonal antibody directed against the influenza A virus, characterized in that it has a neutralizing activity against a plurality of subtypes of the influenza A virus.

3. A monoclonal antibody according to claim 1 or 2, wherein the said plurality of subtypes of the influenza A virus comprises at least one influenza A virus subtype containing hemagglutinin H1 and one influenza A virus subtype containing hemagglutinin H3.

4. A monoclonal antibody according to claim 2 or 3, comprising at least one heavy chain variable domain and one light chain variable domain, with the heavy chain variable domain having amino acid sequence SEQ ID NO:1 and the light chain variable domain having amino acid sequence SEQ ID NO:2.

5. The monoclonal antibody according to claim 4, comprising at least one heavy chain variable domain and one light chain variable domain, with the heavy chain variable domain encoded by nucleotide sequence SEQ ID NO:3 and the light chain variable domain encoded by nucleotide sequence SEQ ID NO:4.

6. The monoclonal antibody according to claim 1, which is capable of binding the hemagglutinin conformational epitope specifically recognized by the monoclonal antibody according to claim 5.

7. A monoclonal antibody according to any of claims 1 to 6, selected from the group consisting of whole immunoglobulins and immunoglobulin fragments comprising at least one heavy chain variable domain and one light chain variable domain.

8. The monoclonal antibody according to claim 7, wherein the said immunoglobulin

fragments are selected from the group comprising Fab fragments, Fab' fragments, $F(ab')_2$ fragments, Fv fragments, single chain antibodies (scFv).

9. A monoclonal antibody according to any of claims 1 to 8, which is a human or humanized antibody.

10. An isolated polypeptide selected from SEQ ID NO:1 and SEQ ID NO:2, or fragment thereof at least 8 amino acids in length capable of binding a plurality of subtypes of the influenza A virus *in vitro*.

11. The isolated polypeptide according to claim 10, which has a neutralizing activity against a plurality of subtypes of the influenza A virus.

12. An anti-idiotype antibody that is specifically directed against the idiotype of a monoclonal antibody according to any of claims 1 to 9.

13. An isolated nucleotide sequence selected from SEQ ID NO:3 and SEQ ID NO:4.

14. An expression vector comprising nucleotide sequence SEQ ID NO:3, or nucleotide sequence SEQ ID NO:4, or both the nucleotide sequences SEQ ID NO:3 and SEQ ID NO:4.

15. A host cell transformed by an expression vector according to claim 14.

16. A pharmaceutical composition comprising an effective amount of at least one antibody or one polypeptide according to any of claims 10 to 12 and a pharmaceutically acceptable carrier and/or diluent.

17. An antibody or polypeptide according to any of claims 1 to 12, as a prophylactic or therapeutic medicament for an influenza A virus infection or a pathology directly or indirectly caused by an influenza A virus infection.

18. The use of an antibody or polypeptide according to any of claims 1 to 12 for the manufacture of a prophylactic or therapeutic medicament for an influenza A virus infection or a pathology directly or indirectly caused by an influenza A virus infection.

19. The use according to claim 18, wherein the pathology caused by an influenza A virus infection is the influenza syndrome.

20. An assay method for detecting, in a biological sample from a patient, the presence of anti-influenza virus antibodies having a heterosubtype cross-neutralizing property, comprising contacting the said biological sample with a monoclonal antibody according to any of claims 1 to 9 as a specific assay reagent.

21. A diagnostic kit comprising a monoclonal antibody according to any of claims 1 to 9 as a specific reagent, the said kit being particularly designed for use in a method for detecting or quantifying anti-influenza A virus antibodies having a heterosubtype cross-neutralizing property in a biological sample obtained from a patient.

22. An assay method for detecting, in an immunogenic or vaccine composition, the presence of influenza A virus epitopes capable of eliciting anti-influenza A virus antibodies having a heterosubtype cross-neutralizing property against the influenza A virus, in a subject to which it is administered, comprising contacting the said composition with a monoclonal antibody according to any of claims 1 to 9 as a specific assay reagent.

Claims

1. A human monoclonal antibody directed against influenza A virus hemagglutinin antigen, **characterized in that** it is capable of binding to and neutralizing a plurality of subtypes of the influenza A virus, wherein said plurality of subtypes comprises at least one influenza A virus subtype containing hemagglutinin H1 and at least one influenza A virus subtype containing hemagglutinin H3.

2. A monoclonal antibody according to claim 1, comprising at least one heavy chain variable domain and at least one light chain variable domain, with the heavy chain variable domain having amino acid sequence SEQ ID NO:1 and the light chain variable domain having amino acid sequence SEQ ID NO:2.

3. The monoclonal antibody according to claim 2, comprising at least one heavy chain variable domain and at least one light chain variable domain, with the heavy chain variable domain encoded by nucleotide sequence SEQ ID NO:3 and the light chain variable domain encoded by nucleotide sequence SEQ ID NO:4.

4. The monoclonal antibody according to claim 1, which is capable of binding the hemagglutinin conformational epitope specifically recognized by the monoclonal antibody according to claim 2.

5. A monoclonal antibody according to any of claims 1 to 4, selected from the group consisting of whole immunoglobulins and immunoglobulin fragments comprising at least one heavy chain variable domain and at least one light chain variable domain.

6. The monoclonal antibody according to claim 5, wherein the said immunoglobulin fragments are selected from the group comprising Fab fragments, Fab' fragments, $F(ab')_2$ fragments, Fv fragments, single chain antibodies (scFv).

7. An anti-idiotype antibody that is specifically directed against the idiotype of a monoclonal antibody according to any of claims 1 to 6.

8. Isolated nucleotide sequences SEQ ID NO:3 and SEQ ID NO:4.

9. An expression vector comprising nucleotide sequences SEQ ID NO:3 and SEQ ID NO:4.

10. A host cell transformed by an expression vector according to claim 9.

11. A pharmaceutical composition comprising an effective amount of at least one antibody according to any of claims 1 to 7 and a pharmaceutically acceptable carrier and/or diluent.

12. An antibody according to any of claims 1 to 7, for use in a prophylactic or therapeutic treatment for an influenza A virus infection or a pathology directly or indirectly caused by an influenza A virus infection.

13. The antibody for use according to claim 12, wherein the pathology caused by an influenza A virus infection is the influenza syndrome.

14. An assay method for detecting, in a biological sample from a patient, the presence of anti-influenza virus antibodies having a heterosubtype cross-neutralizing property, comprising contacting the said biological sample with a monoclonal antibody according to any of claims 1 to 6 as a specific assay reagent.

15. A diagnostic kit comprising a monoclonal antibody according to any of claims 1 to 6 as a specific reagent, the said kit being particularly designed for use in a method for detecting or quantifying anti-influenza A virus antibodies having a heterosubtype cross-neutralizing property in a biological sample obtained from a patient.

16. An assay method for detecting, in an immunogenic or vaccine composition, the presence of influenza A virus epitopes capable of eliciting anti-influenza A virus antibodies having a heterosubtype cross-neutralizing property against the influenza A virus, in a subject to which it is administered, comprising contacting the said composition with a monoclonal antibody according to any of claims 1 to 6 as a specific assay reagent.