

WHAT IS CLAIMED IS:

1. A cartridge for sample analysis, comprising:
 - a cartridge base body having, formed therein, a chamber configured to store a liquid containing a test substance, a storage portion configured to store a liquid reagent to be supplied to the chamber and a flow path configured to connect the chamber and the storage portion;
 - a first liquid reagent stored in the storage portion;
 - a first capture substance that specifically binds to the test substance; and
 - magnetic particles immobilized onto an inner wall of the chamber and each having a surface capable of immobilizing the first capture substance,wherein
 - the cartridge is configured such that the first liquid reagent is transferred by a centrifugal force imparted by being rotated about a rotation axis,
 - the magnetic particles are immobilized onto the inner wall in a position contactable with the first liquid reagent transferred from the storage portion to the chamber via the flow path,
 - the first liquid reagent is transferred from the storage portion to the chamber via the flow path by the centrifugal force,
 - the magnetic particles, each immobilizing a complex including the test substance and the first capture substance, are transferred from the chamber by a magnet.
2. The cartridge of claim 1, wherein the magnetic particles are immobilized to the inner wall by a solid mixture containing sugar and protein.
3. The cartridge of claim 2, wherein a mass ratio of the sugar to the protein in the solid mixture is not less than 0.1 and not greater than 100.
4. The cartridge of claim 3, wherein the mass ratio of the sugar to the protein in the solid mixture is not less than 0.5 and not greater than 30.
5. The cartridge of any one of claims 2 to 4, wherein a mass ratio of the magnetic particles to the protein contained in the solid mixture is not less than 0.05 and not greater than 10.

6. The cartridge of any one of claims 1 to 5, wherein
the magnetic particles are obtained by drying, on the inner wall of the chamber, a suspension of the magnetic particles which is obtained by dispersing the magnetic particles into a solution containing sugar and protein, and
a concentration of the protein in the suspension of the magnetic particles is not less than 0.1 mass% and not greater than 20 mass%.
7. The cartridge of claim 6, wherein a concentration of the sugar in the suspension of the magnetic particles is not less than 0.5 mass% and not greater than 30 mass%.
8. The cartridge of any one of claims 1 to 7, wherein the first capture substance is contained in the first liquid reagent.
9. The cartridge of any one of claims 1 to 7, wherein the first capture substance is immobilized to surfaces of the magnetic particles.
10. The cartridge of any one of claims 1 to 9, wherein the first capture substance is an antibody or an antigen that specifically binds to the test substance.
11. The cartridge of claim 2, or any one of claims 3 to 10 which directly or indirectly depends on claim 2, wherein the sugar contained in the solid mixture is at least one selected from among a monosaccharide and a disaccharide.
12. The cartridge of claim 11, wherein the sugar contained in the solid mixture is at least one selected from among sucrose, trehalose, glucose, lactose, fructose, maltose, and galactose.
13. The cartridge of claim 2, or any one of claims 3 to 12 which directly or indirectly depends on claim 2, wherein the protein contained in the solid mixture is at least one selected from among proteins having function of stabilizing the magnetic particles and the first capture substance.
14. The cartridge of claim 13, wherein the protein contained in the solid mixture is at least one selected from among albumin, crystallin, casein, normal serum protein, collagen, gelatin, gelysate, skim milk, lactic acid ferment, and decomposition products thereof.

15. The cartridge of claim 2, or any one of claims 3 to 10 which directly or indirectly depends on claim 2, wherein the sugar contained in the solid mixture is sucrose, and the protein contained in the solid mixture is bovine serum albumin.
16. The cartridge of any one of claims 1 to 15, wherein the chamber to which the magnetic particles are immobilized is made of a material selected from among cycloolefin polymer, polymethyl methacrylate, cycloolefin copolymer, polypropylene, polyethylene, polystyrene, polycarbonate, acrylonitrile-butadiene-styrene copolymer, and glass.
17. The cartridge of any one of claims 1 to 16, wherein the cartridge has a plate shape.
18. The cartridge of any one of claims 1 to 17, further comprising a second liquid reagent containing a second capture substance that specifically binds to the test substance, the second liquid reagent being stored in a storage portion different from the storage portion where the first liquid reagent is stored.
19. A method for detecting a test substance by using a cartridge for sample analysis, comprising:
- contacting magnetic particles, immobilized to an inner wall of a chamber formed in the cartridge, each having a surface capable of immobilizing a first capture substance, a sample containing the test substance, the first capture substance that specifically binds to the test substance, and a first liquid reagent in the chamber;
 - dispersing, by agitation, the magnetic particles into a liquid mixture containing the test substance, the first capture substance, and the first liquid reagent;
 - forming a complex containing the test substance and the first capture substance, on the dispersed magnetic particle; and
 - detecting the test substance contained in the complex, wherein
 - the cartridge is configured such that the first liquid reagent is transferred by a centrifugal force imparted by being rotated about a rotation axis,
 - the chamber and the storage portion are connected by a flow path,
 - the magnetic particles are immobilized onto the inner wall in a position contactable with the first liquid reagent transferred from the storage portion to the chamber via the flow path,
 - the first liquid reagent is transferred from the storage portion to the chamber via the flow path by the centrifugal force,

the magnetic particles, each immobilizing the complex including the test substance and the first capture substance, are transferred from the chamber by a magnet.

20. The method of claim 19, wherein the magnetic particles are immobilized to the inner wall by a solid mixture containing sugar and protein.

21. The method of claim 20, wherein a mass ratio of the sugar to the protein in the solid mixture is not less than 0.1 and not greater than 100.

22. The method of claim 21, wherein the mass ratio of the sugar to the protein in the solid mixture is not less than 0.5 and not greater than 30.

23. The method of any one of claims 20 to 22, wherein a mass ratio of the magnetic particles to the protein contained in the solid mixture is not less than 0.05 and not greater than 10 in the cartridge for sample analysis.

24. The method of any one of claims 19 to 23, wherein the first liquid reagent is a solution containing the first capture substance that specifically binds to the test substance.

25. The method of any one of claims 19 to 24, wherein the magnetic particles are particles having surfaces to which the first capture substance that specifically binds to the test substance is immobilized.

26. The method of any one of claims 19 to 25, wherein the first capture substance is an antibody or an antigen that specifically binds to the test substance.

27. The method of claim 20, or any one of claims 21 to 26 which directly or indirectly depends on claim 20, wherein the sugar contained in the solid mixture is at least one selected from among a monosaccharide and a disaccharide.

28. The method of claim 27, wherein the sugar contained in the solid mixture is at least one selected from among sucrose, trehalose, glucose, lactose, fructose, maltose, and galactose.

29. The method of claim 20, or any one of claims 21 to 28 which directly or indirectly depends on claim 20, wherein the protein contained in the solid mixture is at least one selected from among proteins having function of stabilizing the magnetic particles and the first capture substance.

30. The method of claim 29, wherein the protein contained in the solid mixture is at least one selected from among albumin, crystallin, casein, normal serum protein, collagen, gelatin, gelysate, skim milk, lactic acid ferment, and decomposition products thereof.

31. The method of claim 20, or any one of claims 21 to 26 which directly or indirectly depends on claim 20, wherein the sugar contained in the solid mixture is sucrose, and the protein contained in the solid mixture is bovine serum albumin.

32. The method of any one of claims 19 to 31, wherein the sample is blood, plasma, or serum.

33. The method of any one of claims 19 to 32, further comprising, between the forming of the complex and the detecting of the complex, adding a second liquid reagent containing a second capture substance that specifically binds to the test substance, and forming a complex containing the test substance, the first capture substance, and the second capture substance, on the dispersed magnetic particles.

34. The method of claim 33, wherein
the second capture substance is a labeled antibody or a labeled antigen that specifically binds to the test substance, and
the test substance is detected on the basis of labeling of the labeled antibody or the labeled antigen contained in the complex.

35. The method of any one of claims 19 to 34, wherein the agitation is performed by applying at least one of the centrifugal force and an inertial force to the cartridge, and causing magnitudes of the applied centrifugal force and inertial force to change with time.