

CLAIMS

1. A method of detecting L-FABP (liver-type fatty acid binding protein) in a sample with an anti-L-FABP antibody by a particle agglutination measurement method, comprising the step of: bringing an anti-L-FABP antibody and a compound having a partial structure of $\text{NH}_2\text{-C=N-}$ and a cyclic structure in a molecule into contact with a sample suspected of containing L-FABP, wherein

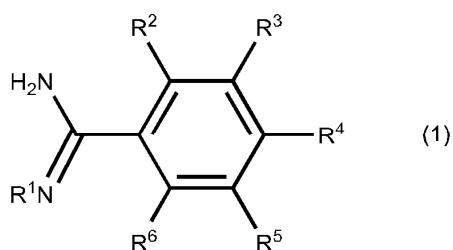
the step of bringing the anti-L-FABP antibody and the compound having a partial structure of $\text{NH}_2\text{-C=N-}$ and a cyclic structure in a molecule into contact with the sample suspected of containing L-FABP is performed in the order in which

a step of bringing the compound into contact with the sample suspected of containing L-FABP is followed by a step of bringing the compound into contact with the anti-L-FABP antibody;

wherein the compound having a partial structure of $\text{NH}_2\text{-C=N-}$ and a cyclic structure in a molecule is one or two or more selected from a compound represented by Formula (1) or salt or ester thereof and a compound represented by Formula (2) or salt thereof:

the compound of Formula (1)

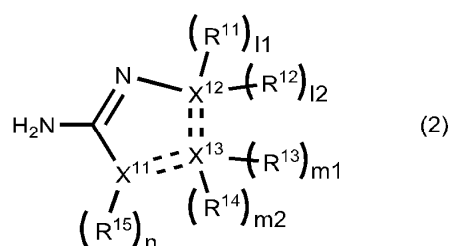
[Chem 1]



[in Formula (1), R^1 is a hydrogen atom, a hydroxyl group, or an alkyl group having the carbon number of 1, 2, or 3 that may be branched, and R^2 to R^6 each independently represent a hydrogen atom, a halogen atom, an alkyl group having the carbon number of 1, 2, or 3 that may be branched, a hydroxyl group, a carboxy group, an amino group, or -SR^7 (R^7 represents a hydrogen atom, a hydroxyl group, or an alkyl group having the carbon number of 1, 2, or 3 that may be branched and, when a plurality of R^7 's are present, R^7 's may be the same groups as or different groups from each other)] or salt or ester thereof; and

the compound of Formula (2)

[Chem 2]



[in Formula (2), R^{11} to R^{14} each independently represent a hydrogen atom, a halogen atom, an alkyl group having the carbon number of 1, 2, or 3 that may be branched, an amino group, a phenyl group that may be substituted with a halogen atom, or $-SR^{16}$ (R^{16} represents a hydrogen atom, a hydroxyl group, or an alkyl group having the carbon number of 1, 2, or 3 that may be branched and, when a plurality of R^{16} s are present, R^{16} s may be the same groups as or different groups from each other), wherein R^{11} and R^{12} present in the same molecule may form a carbonyl group together and R^{13} and R^{14} present in the same molecule may form a carbonyl group together, R^{15} represents a hydrogen atom, a halogen atom, or an alkyl group having the carbon number of 1, 2, or 3 that may be branched,

X^{11} is a nitrogen atom or a sulfur atom,

X^{12} and X^{13} are each independently a carbon atom or a nitrogen atom, and

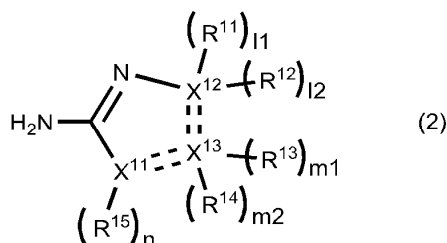
l_1 , l_2 , m_1 , m_2 , and n are each independently 0 or 1,

a double broken line between X^{11} and X^{13} and a double broken line between X^{12} and X^{13} are each independently a single bond or a double bond, wherein

the values of l_1 , l_2 , m_1 , m_2 , and n as well as the bonds of the double broken line between X^{11} and X^{13} and the double broken line between X^{12} and X^{13} indicate values and bonds appropriately determined depending on the valences of X^{11} to X^{13}], or salt thereof.

2. The method according to claim 1, wherein the compound represented by Formula (2) or salt thereof is one or two or more selected from the following compound or salt thereof:
- the compound of Formula (2)

[Chem 3]



[In Formula (2), R^{11} to R^{14} each independently represent a hydrogen atom, a halogen atom, an alkyl group having the carbon number of 1, 2, or 3 that may be branched, an amino group, a phenyl group that may be substituted with a halogen atom, or $-SR^{16}$ (R^{16} represents a hydrogen atom, a hydroxyl group, or an alkyl group having the carbon number of 1, 2, or 3 that may be branched and, when a plurality of R^{16} s are present, R^{16} s may be the same groups as or different groups from each other), wherein R^{11} and R^{12} present in the same molecule may form a carbonyl group together and R^{13} and R^{14} present in the same molecule may form a carbonyl group together, R^{15} represents a hydrogen atom, a halogen atom, or an alkyl group having the carbon number of 1, 2, or 3 that may be branched], wherein

in a combination of X^{11} to X^{13} , $l1+l2$, $m1+m2$, n ($l1$, $l2$, $m1$, $m2$, and n each independently represent 0 or 1), and double broken lines,

(a) X^{11} is a sulfur atom, X^{12} and X^{13} are carbon atoms, $l1+l2$ is 2, $m1+m2$ is 2, n is 0, and the double broken lines between X^{11} and X^{13} and between X^{12} and X^{13} are single bonds,

(b) X^{11} is a sulfur atom, X^{12} and X^{13} are carbon atoms, $l1+l2$ is 1, $m1+m2$ is 1, n is 0, the double broken line between X^{11} and X^{13} is a single bond, and the double broken line between X^{12} and X^{13} is a double bond,

(c) X^{11} is a nitrogen atom, X^{12} and X^{13} are carbon atoms, $l1+l2$ is 2, $m1+m2$ is 2, n is 1, and the double broken lines between X^{11} and X^{13} and between X^{12} and X^{13} are single bonds,

(d) X^{11} is a nitrogen atom, X^{12} and X^{13} are carbon atoms, $l1+l2$ is 1, $m1+m2$ is 1, n is 1, the double broken line between X^{11} and X^{13} is a single bond, and the double broken line between X^{12} and X^{13} is a double bond,

(e) X^{11} and X^{12} are nitrogen atoms, X^{13} is a carbon atom, $l1+l2$ is 1, $m1+m2$ is 1, n is 0, the double broken line between X^{11} and X^{13} is a double bond, and the double broken line between X^{12} and X^{13} is a single bond, or

(f) X^{11} , X^{12} , and X^{13} are nitrogen atoms, $l1+l2$ is 0, $m1+m2$ is 0, n is 1, the double broken line between X^{11} and X^{13} is a single bond, and the double broken line between X^{12} and X^{13} is a double bond, or salt thereof.

3. The method according to any one of claims 1 to 2, wherein at the step of bringing the anti-L-FABP antibody and the compound having a partial structure of $NH_2-C=N-$ and a cyclic structure in a molecule into contact with a sample suspected of containing L-FABP, the concentration of the compound is 300 mmol/L to 500 mmol/L.

4. The method according to any one of claims 1 to 3, wherein the anti-L-FABP antibody is immobilized on an insoluble carrier, and the insoluble carrier is a latex particle, or a metal colloid particle.

5. The method according to any one of claims 1 to 4, wherein the anti-L-FABP antibody is two or more monoclonal antibodies having recognition sites different from each other.

6. The method according to claim 5, wherein the two or more monoclonal antibodies having recognition sites different from each other are respectively immobilized on latex particles, and wherein L-FABP is detected by a latex turbidimetric immunoassay.

7. The method according to any one of claims 1 to 6, wherein the sample is urine, whole blood, serum, or plasma.

8. A method of improving measurement sensitivity in a method of detecting L-FABP in a sample with an anti-L-FABP antibody by a particle agglutination measurement method, comprising the step of: bringing an anti-L-FABP antibody and a compound having a partial structure of $NH_2-C=N-$ and a cyclic structure in a molecule into contact with a sample suspected of containing L-FABP, wherein

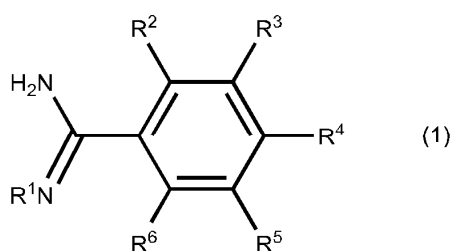
the step of bringing the anti-L-FABP antibody and the compound having a partial structure of $NH_2-C=N-$ and a cyclic structure in a molecule into contact with the sample suspected of containing L-FABP is performed in the order in which

a step of bringing the compound into contact with the sample suspected of containing L-FABP is followed by a step of bringing the compound into contact with the anti-L-FABP antibody;

wherein the compound having a partial structure of $\text{NH}_2\text{-C=N-}$ and a cyclic structure in a molecule is one or two or more selected from a compound represented by Formula (1) or salt or ester thereof and a compound represented by Formula (2) or salt thereof:

the compound of Formula (1)

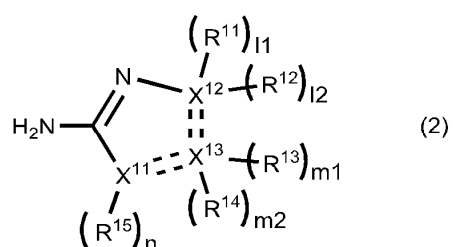
[Chem 1]



[in Formula (1), R^1 is a hydrogen atom, a hydroxyl group, or an alkyl group having the carbon number of 1, 2, or 3 that may be branched, and R^2 to R^6 each independently represent a hydrogen atom, a halogen atom, an alkyl group having the carbon number of 1, 2, or 3 that may be branched, a hydroxyl group, a carboxy group, an amino group, or -SR^7 (R^7 represents a hydrogen atom, a hydroxyl group, or an alkyl group having the carbon number of 1, 2, or 3 that may be branched and, when a plurality of R^7 s are present, R^7 s may be the same groups as or different groups from each other)] or salt or ester thereof; and

the compound of Formula (2)

[Chem 2]



[in Formula (2), R^{11} to R^{14} each independently represent a hydrogen atom, a halogen atom, an alkyl group having the carbon number of 1, 2, or 3 that may be branched, an amino group, a phenyl group that may be substituted with a halogen atom, or -SR^{16} (R^{16} represents

a hydrogen atom, a hydroxyl group, or an alkyl group having the carbon number of 1, 2, or 3 that may be branched and, when a plurality of R^{16} s are present, R^{16} s may be the same groups as or different groups from each other), wherein R^{11} and R^{12} present in the same molecule may form a carbonyl group together and R^{13} and R^{14} present in the same molecule may form a carbonyl group together, R^{15} represents a hydrogen atom, a halogen atom, or an alkyl group having the carbon number of 1, 2, or 3 that may be branched,

X^{11} is a nitrogen atom or a sulfur atom,

X^{12} and X^{13} are each independently a carbon atom or a nitrogen atom, and

l_1 , l_2 , m_1 , m_2 , and n are each independently 0 or 1,

a double broken line between X^{11} and X^{13} and a double broken line between X^{12} and X^{13} are each independently a single bond or a double bond, wherein

the values of l_1 , l_2 , m_1 , m_2 , and n as well as the bonds of the double broken line between X^{11} and X^{13} and the double broken line between X^{12} and X^{13} indicate values and bonds appropriately determined depending on the valences of X^{11} to X^{13}], or salt thereof.