Claims

[Claim 1]

An agent for preventing decomposition of biopyrrin, comprising an antioxidant substance having enediol structure, or a salt, an ester or a glycoside thereof, or a solvate, a stereoisomer or a tautomer thereof.

[Claim 2]

The agent for preventing decomposition according to claim 1, wherein the antioxidant substance having enediol structure is a reductone.

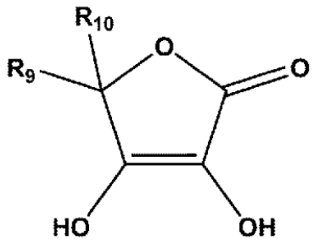
[Claim 3]

The agent for preventing decomposition according to claim 2, wherein the reductone is a compound having 3,4-dihydroxy-furan-2(5H)-one structure.

[Claim 4]

The agent for preventing decomposition according to claim 3, wherein the compound having 3,4-dihydroxy-furan-2(5H)-one structure is a compound of formula (V):

[Formula 1]



(V)

wherein R^9 and R^{10} are each independently hydrogen; alkyl; or alkyl substituted with one or more of the same or different substituents selected from a group consisting of hydroxy, carboxy, alkoxy, alkoxycarbonyl, oxo, acyl and acyloxy.

[Claim 5]

The agent for preventing decomposition according to claim 4, wherein the compound of formula (V) is ascorbic acid.

[Claim 6]

A biological sample to which added is the agent for preventing decomposition according to any one of claims 1 to 5.

[Claim 7]

The biological sample according to claim 6, wherein the biological sample is urine.

[Claim 8]

The biological sample according to claim 6 or 7, wherein the antioxidant substance having enediol structure comprised in the agent for preventing decomposition is present in the biological sample at a concentration within a range of 1 mM to 20 mM.

[Claim 9]

The biological sample according to any one of claims 6 to 8, wherein the antioxidant substance having enediol structure comprised in the agent for preventing decomposition is present in the biological sample at a concentration of 10 mM.

[Claim 10]

A method of preventing decomposition of biopyrrin in a biological sample, comprising a step of adding the agent for preventing decomposition according to any one of claims 1 to 5 to the biological sample.

[Claim 11]

A method of storing a biological sample, comprising steps of:

(a) adding the agent for preventing decomposition according to any one of claims 1 to 5 to the biological sample; and

(b) storing the biological sample at ambient temperature or lower.

[Claim 12]

A method of measuring a concentration of biopyrrin in a biological sample, comprising steps of:

(a) adding the agent for preventing decomposition according to any one of claims 1 to 5 to the biological sample; and

(b) measuring the concentration of biopyrrin in the biological sample.

[Claim 13]

The method according to claim 12, further comprising a step of storing the biological sample at ambient temperature or lower after step (a).

[Claim 14]

A method of obtaining data for assessing an oxidative stress state in a subject, comprising steps of:

(a) adding the agent for preventing decomposition according to any one of claims 1 to 5 to a biological sample obtained from the subject; and

(b) measuring a concentration of biopyrrin in the biological sample;

wherein, when the measured concentration is higher than a concentration of biopyrrin in a reference sample, the concentration data indicates that the subject is under the oxidative stress state.

[Claim 15]

The method according to claim 14, further comprising a step of storing the biological sample at ambient temperature or lower after step (a).

[Claim 16]

The method according to any one of claims 10 to 15, wherein the biological sample is urine.

[Claim 17]

The method according to any one of claims 10 to 16, wherein the antioxidant substance having enediol structure comprised in the agent for preventing decomposition is added to a concentration within a range of 1 mM to 20 mM.

[Claim 18]

The method according to any one of claims 10 to 17, wherein the antioxidant substance having enediol structure comprised in the agent for preventing decomposition is added to a concentration of 10 mM.