[CLAIMS]

What is claimed is:

[Claim 1]

A method for estimating a level of volatile sulfur compound in breath, the method comprising:

an acquisition step of acquiring an image including a determination portion of a tongue body of a subject; and

an estimation step of estimating the level of the volatile sulfur compound in breath of the subject based on a color of the determination portion of the tongue body included in the image acquired in the acquisition step and a relationship between the color of the determination portion of the tongue body and the level of the volatile sulfur compound in breath,

wherein the level of the volatile sulfur compound in breath of the subject is estimated to be higher as redness of the determination portion of the tongue body of the subject is weaker,

wherein the determination portion includes a median tongue groove included in a central tongue portion that is a portion corresponding to 1/4 to 2/4 from a tongue tip when the tongue body is divided into four regions from a terminal sulcus to the tongue tip in a vertical direction, and

wherein a ratio of an area of the determination portion included in the image to an area of the central tongue portion included in the image is equal to or more than 0.3 and is equal to or less than 1.8.

[Claim 2]

The method for estimating a level of volatile sulfur compound in breath according to claim 1,

wherein the image including the determination portion of the tongue body of the subject is captured by a capturing device including a monitor on which a tongue body positioning guide frame and the determination portion of the tongue body of the subject are displayed, and

wherein the tongue body positioning guide frame is displayed on the monitor such that the ratio of the area of the determination portion included in the image to the area of the central tongue portion included in the image is equal to or more than 0.3 and is equal to or less than 1.8.

[Claim 3]

The method for estimating a level of volatile sulfur compound in breath according to claim 2,

wherein a distance between the determination portion of the tongue body of the subject and the capturing device that is configured to capture the determination portion of the tongue body of the subject is 5 cm to 20 cm.

[Claim 4]

The method for estimating a level of volatile sulfur compound in breath according to claim 3,

wherein the image including the determination portion of the tongue body of the subject is captured by the capturing device having the number of pixels of 1.2 to 13.2 million pixels.

[Claim 5]

The method for estimating a level of volatile sulfur compound content in breath according to claim 4,

wherein the level of the volatile sulfur compound in breath of the subject is estimated based on a ratio of pixels in which an sRGB value is R-G < 50, occupied in all pixels in the determination portion.

[Claim 6]

A device for estimating a level of volatile sulfur compound in breath, the device comprising:

an acquisition unit that is configured to acquire an image including a determination portion of a tongue body of a subject; and

an estimation unit that is configured to estimate the level of the volatile sulfur compound in breath of the subject based on a color of the determination portion of the tongue body included in the image acquired by the acquisition unit and a relationship between the color of the determination portion of the tongue body and the level of the volatile sulfur compound in breath,

wherein the level of the volatile sulfur compound in breath of the subject is estimated to be higher as redness of the determination portion of the tongue body of the subject is weaker,

wherein the determination portion includes a median tongue groove included in a central tongue portion that is a portion corresponding to 1/4 to 2/4 from a tongue tip when the tongue body is divided into four regions from a terminal sulcus to the tongue tip in a vertical direction, and

wherein a ratio of an area of the determination portion included in the image to an area of the central tongue portion included in the image is equal to or more than 0.3 and is equal to or less than 1.8.

[Claim 7]

A program causing a computer to execute

an acquisition step of acquiring an image including a determination portion of a tongue body of a subject; and

an estimation step of estimating a level of volatile sulfur compound in breath of the subject based on a color of the determination portion of the tongue body included in the image acquired in the acquisition step and a relationship between the color of the determination portion of the tongue body and the level of the volatile sulfur compound in breath,

wherein the level of the volatile sulfur compound in breath of the subject is estimated to be higher as redness of the determination portion of the tongue body of the subject is weaker,

wherein the determination portion includes a median tongue groove included in a central tongue portion that is a portion corresponding to 1/4 to 2/4 from a tongue tip when the tongue body is divided into four regions from a terminal sulcus to the tongue tip in a vertical direction, and

wherein a ratio of an area of the determination portion included in the image to an area of the central tongue portion included in the image is equal to or more than 0.3 and is equal to or less than 1.8.

[Claim 8]

A bad breath care method using the method for estimating a level of volatile sulfur compound in breath according to any one of claims 1 to 7.