Claims

1. A method for evaluating the ability of cells to grow into a sheet, comprising:

(1) a step of examining cell cultures growing into a sheet to determine their impedance and/or electrical resistance or numerical values relating thereto;

(2) a step of comparing the numerical values determined by Step (1) with reference values; and

(3) a step of judging, based on the results of comparison obtained in Step (2), the ability of cells to grow into a sheet,

wherein the impedance and/or electrical resistance or numerical values relating thereto include Rb/α or a numerical value relating thereto.

2. A method for producing a sheetlike cell culture, comprising:

(1) a step of examining cell cultures growing into a sheet to determine their impedance and/or electrical resistance or numerical values relating thereto;

(2) a step of comparing the numerical values determined by Step (1) with reference values;

(3) a step of judging, based on the results of comparison obtained in Step (2), the ability of cells to grow into a sheet; and

(4) a step of controlling, based on the result of judgment obtained in Step (3), a process of producing the sheetlike cell culture,

wherein the impedance and/or electrical resistance or numerical values relating thereto include Rb/α or a numerical value relating thereto.

3. The method defined in claim 1 or 2, wherein the determination of impedance and/or electrical resistance is performed periodically in Step (1).

4. The method defined in any of claims 1 to 3, wherein Step (1) further includes determination of voltage phase relative to current phase.

5. The method defined in any of claims 1 to 4, wherein the determination of impedance in Step (1) is performed at two or more frequencies.

6. The method defined in any of claims 1 to 5, wherein the impedance and/or electrical resistance or numerical values relating thereto further include parameters selected from a group consisting of electrical resistance, capacitance, Rb, α, and Cm of the cell culture and a numerical value selected from a group consisting of peak values, times to peak, and slopes to peak of the parameters.

7. The method defined in claim 6, wherein the impedance and/or electrical resistance or numerical values relating thereto further include an electrical

resistance, and cells are judged to be low in ability to grow into a sheet if the electrical resistance determined in Step (3) is equal to or smaller than the reference value.

8. The method defined in claim 6 or 7, wherein the impedance and/or electrical resistance or numerical values relating thereto further include Rb and α, and cells are judged to be low in ability to grow into a sheet if the values of Rb, α, and Rb/α determined in Step (3) are equal to or smaller than the reference values.

9. The method defined in claim 6 or 7, wherein the impedance and/or electrical resistance or numerical values relating thereto further include Rb and α, and cells are judged to be adequate or excessive in ability to grow into a sheet if the values of Rb, α, and Rb/α determined in Step (3) are equal to or larger than the reference values.

10. The method defined in claim 6, wherein cells are judged to be low in ability to grow into a sheet if the impedance and/or electrical resistance or numerical values relating thereto further includes at least one numerical value selected from a group consisting of the peak value of electrical resistance, the peak value of Rb and the slope to peak of Rb, and in Step (3), the numerical value selected from the group consisting of the peak value of electrical resistance, the peak value of Rb

and the slope to peak of Rb is equal to or smaller than the reference values, and/or if the impedance and/or electrical resistance or numerical values relating thereto further include at least one numerical value selected from a group consisting of the time to peak of electrical resistance and the time to peak of Rb, and the numerical value selected from the group consisting of the time to peak of electrical resistance and the time to peak of Rb is equal to or larger than the reference values.

11. The method defined in claim 6, wherein cells are judged to be adequate in ability to grow into a sheet if the impedance and/or electrical resistance or numerical values relating thereto further include at least one numerical value selected from the group consisting of the time to peak of electrical resistance and the time to peak of Rb, and, in Step (3), the numerical value selected from the group consisting of the time to peak of electrical resistance and the time to peak of Rb is equal to or smaller than the reference values, and a numerical value selected from a group consisting of the peak value of Rb/α and the slope to peak of Rb/α is equal to or smaller than the reference value, and/or if the numerical value selected from the group consisting of the time to peak of electrical resistance and the time to peak of Rb is equal to or

smaller than the reference value and the time to peak of Rb/α is equal to or longer than the reference value.

12. The method defined in claim 6, wherein cells are judged to have excessive ability to grow into a sheet if, in Step (3), the numerical values selected from a group consisting of the peak value of Rb/α and the slope to peak of Rb/α are equal to or larger than the reference values, and/or if the time to peak of Rb/α is equal to or shorter than the reference value.

13. A system for evaluating the ability of cells to grow into a sheet, by using the method in claim 1, comprising:

a container for cultivation to grow cells into a sheet; and

a measuring apparatus to determine impedance and/or electrical resistance of the cell culture in the container.