Claims

[Claim 1]

A drug solution injection needle that is a hollow needle for puncturing a myocardium of a patient and injecting a drug solution, comprising:

a distal end member, the distal end member being a sharp member and made of metal;

a connecting tube having electrical insulating properties connected to a base end side of the distal end member;

a metal tube connected to a base end side of the connecting tube;

an insulating layer covering an outer circumferential surface of a base end portion of the metal tube,

the connecting tube and/or the distal end member includes at least one hole communicating with a cavity of the drug solution injection needle and open to an outer surface of the connecting tube or the distal end member, and

an electrode configured to measure electric potential is formed by a distal end portion of the metal tube not covered by the insulating layer;

wherein the distal end member does not form the electrode.

[Claim 2]

The drug solution injection needle according to claim 1, wherein

a distal end of the distal end member is closed, and

a tube wall of the connecting tube includes a plurality of side holes communicating with the cavity of the drug solution injection needle and open to the outer circumferential surface of the connecting tube.

[Claim 3]

The drug solution injection needle according to claim 2, wherein

side hole groups including the plurality of side holes arranged in an axial direction of the connecting tube are disposed at even angular intervals apart in a circumferential direction of the connecting tube.

[Claim 4]

The drug solution injection needle according to claim 3, wherein

the side holes of the side hole groups located on a distal end side have a larger diameter than the side holes located on the base end side.

[Claim 5]

The drug solution injection needle according to claim 1 or 2, wherein

a helical slit is formed in a distal end region of the base end portion of the metal tube.

[Claim 6]

The drug solution injection needle according to claim 1 or 2, wherein the drug solution is a cardiac regenerative cell formulation.

[Claim 7]

A drug solution injection needle system, comprising:

the drug solution injection needle according to claim 1 or 2; and

a notification unit configured to notify an operator that injection of the drug solution is possible when an electric potential measured by the electrode of the drug solution injection needle is equal to or greater than a predetermined value.