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ELECTRIC POTENTIAL TREATMENT APPARATUS AND INDUCED CURRENT CONTROL METHOD

Field of the Invention

The present invention relates to an electric potential treatment apparatus having a function for increasing the electric field applied to a specific part of a human body and an induced current control method.

Description of the Prior Art

In general, the electric potential treatment apparatus is designed for being adaptable to the commercial power sources, e.g., 100V (50/60Hz), 120V (50/60Hz), 200V or 220V (50/60Hz), 115V (50/60Hz). The conventional apparatus is designed so that the desired treatment effect can be obtained by letting the electric current flow in the human body, such electric current occurring corresponding to the intensity of the electric field generated on the surfaces of various parts of a human body, when a human body is placed in the electric field occurring between a high-voltage electrode, whose voltage is raised by means of a transformer, and an opposing electrode (provided on the ceiling, walls and one provided by the apparatus). In the cases of the electric potential treatment apparatus, in which the potential

of a human body is kept at a high level, the electric potential treatment apparatus, in which the potential of a human body is not kept at a high level, the electric potential treatment apparatus, which is provided with a opposing electrode, the electric potential treatment apparatus, which is not provided with an electrode or a opposing electrode, the treatment effect is obtained by letting the induced current flow in a human body, such induced current occurring corresponding to the intensity of the electric field occurring near the surface of a human body when a human body is placed in a high intensity electric field occurring between a high-potential electrode and an opposing electrode or surrounding walls or the ceiling serving as an opposing electrode.

A multi-electrode type electric potential treatment apparatus, which is designed for enabling an induction electrode, set to a specific voltage or potential and set controllable to an optimal level, to be brought close to a human body, has been invented but is not practical because of being likely to cause an electric shock to a human body and being likely to cause the patient to feel a spatially oppressive sensation. Since the distribution of the effective spots and connecting routes to react to the electrodes in the human body vary delicately from person to person, none of currently available electric potential treatment apparatus is capable of precisely locating the effective spots and the routes

connecting the effective spots nor is capable of making such effective spots develop high potentials and resultant induced current. However, there is available the kind of treatment method designed for being capable of detecting principal effective spots and the principal routes having good conductivities and connecting the effective spots and for being capable of letting the electric current flow, supplied from an electric current supplier, through the needles knocked in the effective spots. However, such effective spots and routes connecting the effective spots need to be detected by a specialist or by using a special apparatus. The treatment in such a way, however, needs to be applied to the specified effective spots in order to obtain desired effect.

The present invention is made in consideration of the above-mentioned problems of the prior art and is intended for providing an electric potential treatment apparatus and an induced current control method designed not only for being capable of supplying optimal and effective induced current to the effective spots and the connecting routes of the effective spots having good conductivities but also for being capable of preventing unnecessary rise of the voltage for preventing other parts of a human body from being subjected to the flow unnecessary induced current, without causing any high voltage applied to a specified spot to rise the voltages applied to other spots, and without calling for

the services of the special apparatuses or specialists in locating the effective spots and the connecting routes of the effective spots having good conductivities locations because of the electric potential intensifiers placed to roughly cover the effective spots and the connecting routes of the effective spots having good conductivities.

Summary of the Invention

The electric potential treatment apparatus comprises the electric potential treatment unit and the high-voltage generator, and the electric potential treatment unit is provided with a pair of opposing electrodes to be disposed above the head of the patient to be treated, while the electric field intensifying member is disposed roughly covering the effective spots and the connecting routes of the effective spots having good conductivities.

In the electric potential treatment apparatus, the electric field intensifying member is composed of a conductor having a high conductivity is covered with a dielectric made from the glass or acrylic resin.

The induced current control method is designed so that the electric field applied to a specific part of a human body can be increased or decreased.

Brief Description of the Drawings

Fig. 1 is a schematic diagram illustrating the electric potential treatment apparatus having an electric field intensifying member as an embodiment of the present invention.

Fig.2 is a schematic diagram showing the electric field intensifying member according to the present invention.

Detailed Description of the Preferred Embodiments

The electric potential treatment unit having the electric field intensifying member as an embodiment of the present invention will be described in detail in the following referring to the drawings.

As shown in Fig. 1, the electric potential treatment apparatus 1 comprises the electric potential treatment unit 2, the electric field intensifying member 3, the high-voltage generator 4 and the commercial power source. The electric potential treatment unit 2 comprises a chair 8 with a pair of armrests 7, on which a patient 6 is to be seated, an opposing electrode (grounded electrode) 9 disposed above the head of the patient to be treated and a footrest 10, placed on the floor, on which the feed of the patient rest. The high-voltage generator 4 generates a high voltage to be applied to the electrode 10 of the footrest. The high-voltage generator 4 is normally installed under the seat and on the floor among the four feet or installed near the chair.

The opposing electrode (grounded electrode) 9 and the electrode 10 of the footrest are covered with the insulating members. The electrode 10 of the footrest is connected to the terminal of the high-voltage generator by means of an electric cord. The chair 8 is provided with insulated terminals 11 at the points of connection with the floor. Similarly, the electrode 10 of the footrest is provided with the insulated terminals 12 at the points of connection with the floor. The high-voltage generator 4 comprises the commercial power source, the boosting transformer for raising the 100V of the commercial power source to, e.g., 15,000V, the current-limiting resistor and the high-voltage generator for applying high-voltage to the electrode 10 of the footrest (all not shown).

When using the above-mentioned electric potential treatment apparatus, the high-voltage generator 4 is actuated to make the applied voltage develop the electric field over the surface of a human body thereby to cause an extremely small amount of induced current to flow in the predetermined parts of the human body. In general, the intensity of the electric field and the intensity of the induced current developed on the surface of the human body are dependent on the applied voltage and the conditions of the opposing electrode, floor, wall or the like. The amount of the induced current is controlled to the level of $10mA/m^2$ or less to

the human body.

The electric field intensifying member 3 comprises the conductor 20 having a high conductivity and the dielectric 22 composed of the glass material or acrylic resin material. The dielectric 22 is provided between the surface of the body of the patient and the conductor 20. Preferably, the dielectric 22 is provided covering the conductor 20. The electric field intensifying member 3 is attached to the part of the patient' s body including the effective spots and the routes connecting the effective spots. The electric field intensifying member 3 is placed on various effective spots such as those on the hands, back, legs and neck. The electric field intensifying member 3 may be placed on one or several spots, or on pairing two spots. The electric field intensifying member 3 may be attached either by applying the attaching agent on the dielectric or by being bound with a piece of string or belt such as wristlet. Thus, the induced current occurring the specific part of the patient' s body can be increased or decreased to control the level of the induced current in the specific parts of the patient' s body, thereby controlling the dose to an optimal level.

The electric potential treatment apparatus may be either a chair type or a bed type, since it operates similarly regardless of the type.

The electric potential treatment apparatus and the induced current control method according to the present invention is designed so that not only the optimal and effective amount of induced current can be provided for specified parts of the human body but also the rise of the temperature causing the various parts of the human body to be subjected to unnecessary induced current can be prevented by placing the electric field intensifying member roughly covering the area of the human body including the effective spots and the connecting routes of the effective spots having good conductivities, without causing the various parts of the human body to be subjected to unnecessary induced current whose amount is increased due to the rise of the voltage and without calling for the services of the specialists and special machines in detecting the locations of the effective spots and the connecting routes of the effective spots having good conductivities.

Industrial Applicability

This invention provides an electric potential treatment apparatus for increasing the electric field applied to a human body and an induced current control method.

WHAT IS CLAIMED IS:

1. An electric potential treatment apparatus, comprising an electric potential treatment unit and a high-voltage generator, wherein said electric potential treatment unit comprises a pair of opposing electrodes to be disposed above the head of the patient to be treated and the electrode of the footrest, and an electric field intensifying member for intensifying the electric field is normally provided covering the positions corresponding to the routes leading to effective spots.

2. The electric potential treatment apparatus according to claim 1, wherein the electric field intensifying member is composed of a conductor having a high conductivity covered with the glass or acrylic dielectric.

3. An induced current control method, wherein the induced current occurring in a specific part of the body of a patient is controlled by increasing the electric field applied to a specific part of the body of a patient.