Claims

[Claim 1]

Multiple needles with sharp ends;

A fixture that needles are embedded onto;

A drive system that drives movement directly or indirectly to the fixture for the above needles to be inserted into skin; and

An electric transmission that is connected to the above needles electrically is also included.

The applied electricity is alternating current, the form of signal is high frequency and the needles are bipolar, and this device aims to apply energy in a shape described in Na-effect to achieve coagulation on treated area of skin.

[Claim 2]

Multiple needles with sharp ends;

A fixture that needles are embedded onto;

A drive system that drives movement directly or indirectly to the fixture for the above needles to be inserted into skin; and

An electric transmission that is connected to the above needles electrically is also included.

The applied electricity is alternating current and the needles are bipolar, the polarity of a minimum of 9 neighboring needles is different, alternating between (+) and (-), the form of signal is high frequency, and this device aims to apply energy in a shape described in Na-effect to achieve coagulation on treated area of skin.

[Claim 3]

Multiple needles with sharp ends;

A fixture that needles are embedded onto;

A drive system that drives movement directly or indirectly to the fixture for the above needles to be inserted into skin; and

An electric transmission that is connected to the above needles electrically is also included.

The applied electricity is alternating current and the needles are bipolar, the closest distance between neighboring needles is between 1.3 – 3.0 mm, the form of signal is high frequency, and this device aims to apply energy in a shape described in Na-effect to achieve coagulation on treated area of skin.

[Claim 4]
Multiple needles with sharp ends;
A fixture that needles are embedded onto;
A drive system that drives movement directly or indirectly to the fixture for the above needles to be inserted into skin; and
An electric transmission that is connected to the above needles electrically is also included.

The applied electricity is alternating current and the needles are bipolar, the closest distance between neighboring needles is between 1.3 – 3.0 mm, the polarity of a minimum of 9 neighboring needles is different, alternating between (+) and (-), the form of signal is high frequency, and this device aims to apply energy in a shape described in Na-effect to achieve coagulation on treated area of skin.

[Claim 5]
Multiple needles with sharp ends;
A fixture that needles are embedded onto;
A drive system that drives movement directly or indirectly to the fixture for the above needles to be inserted into skin; and
An electric transmission that is connected to the above needles electrically is also included.

The applied electricity is alternating current, the frequency of alternating current is higher than 20Hz including 20Hz, the needles are bipolar, the closest distance between neighboring needles is between 1.3 – 3.0 mm, the needles in the dermis area are not insulated, the voltage applied to the needles is below 100V, including 100V, and the current flowing time through needles is between 0.05 to 0.8 seconds, and this device aims to apply energy in a shape described in Na-

effect to achieve coagulation on treated area of skin.

[Claim 6]
Multiple needles with sharp ends;
A fixture that needles are embedded onto;
A drive system that drives movement directly or indirectly to the fixture for the above needles to be inserted into skin; and
An electric transmission that is connected to the above needles electrically is also included.

The applied electricity is alternating current, and the needles are bipolar, the closest distance between neighboring needles is between 1.3 – 3.0 mm, the polarity of a minimum of 9 neighboring needles is different, alternating between (+) and (-), the form of signal is high frequency, and this device aims to apply energy in a shape described in Na-plus effect to achieve coagulation on treated area of skin.

[Claim 7]
Multiple needles with sharp ends;
A fixture that needles are embedded onto;
A drive system that drives movement directly or indirectly to the fixture for the above needles to be inserted into skin; and
An electric transmission that is connected to the above needles electrically is also included.

The applied electricity is alternating current; the frequency of alternating current is higher than 20Hz including 20Hz. The needles are bipolar and the closest distance between neighboring needles is between 1.3 – 3.0 mm. The needles in the dermis area are not insulated, the applied volatge is below 100V, including 100V, the device has the current flowing time between 0.05 and 0.8 seconds, and this device aims to apply energy in a shape described in Na-plus effect to achieve coagulation on treated area of skin.

[Claim 8]
Within claims from 1 to 7, the device has the high frequency range of 0.5 – 10 MHz.

[Claim 9]

Within claims from 1 to 7, the device has the high frequency range of 1 – 4 MHz.

[Claim 10]

Within claims from 1 to 7, the device has the high frequency range of 1.5 – 2.5 MHz.

[Claim 11]

Within claims from 1 to 7, the device has needles with the maximum diameter of 0.25 mm or 0.3 mm. The penetration depth of needle into skin is 1 mm - 5 mm.

[Claim 12]

Within claims from 1 to 7, the device has needles with the maximum diameter of 0.25 mm or 0.3 mm. The penetration depth of needle into skin is 0.1 mm - 1 mm.

[Claim 13]

Within claims from 1 to 7, the device has the applied voltage of 10 – 60V.

[Claim 14]

Within claims from 1 to 7, the device has the applied voltage of 20 – 40V.

[Claim 15]

Within any claims from 1 to 7, the device has the current flowing time between 0.1 and 0.4 seconds.

[Claim 16]

Within any claims from 1 to 7, the device has the current flowing time between 0.1 and 0.2 seconds.

CLAIMS

1. A medical treatment apparatus, comprising:
a plurality of needles; the needles not coupled to a human body ground, separated by a distance,
and having a length sufficient to reach a desired region of a human body when inserted into a human body; and
a signal generation module, the signal generation module electrically coupled to the plurality of needles and providing electrical energy signals to the plurality of needles to form an independent, substantially non-intersecting energy field about two or more of the needle tips.

2. The medical treatment apparatus of claim 1, further comprising a drive module to controllably move one or more of the plurality of needles along their length from a first human body region to second human body region.

3. The medical treatment apparatus of claim 1, wherein the signal generation module applies a first alternating current electrical energy signal with a first polarity to a first subset of needles and applies a second alternating current electrical energy signal with a second, opposite polarity to a second subset of needles.

4. The medical treatment apparatus of claim 3, wherein energy field formed about the two or more needle tips is substantially oval in shape.

5. The medical treatment apparatus of claim 3, wherein the signal generation module provides electrical energy signals to the plurality of needles to form an independent, substantially non-intersecting, substantially oval shaped energy fields about the plurality of needles tips.

6. The medical treatment apparatus of claim 1, wherein the medical treatment apparatus is a skin treatment apparatus and each of the plurality of needles has a length sufficient to reach dermis of a human body when inserted into the skin of a human body region.

7. The medical treatment apparatus of claim 1, further comprising a drive module to controllably move one or more of the plurality of needles along their length from an epidermis region to an adjacent dermis region of a human body region.

8. The medical treatment apparatus of claim 3, wherein the first subset and second subset of needles comprise the plurality of needles and the first subset of needles are evenly interspersed between the second subset of needles.

9. The medical treatment apparatus of claim 3, wherein the first subset of needles are singly interspersed between the second subset of needles.

10. The medical treatment apparatus of claim 3, wherein the first and the second alternating current electrical signals have a frequency from 0.5 to 10 Mhz.

11. The medical treatment apparatus of claim 3, wherein the first and the second alternating current electrical signals have a frequency from 1.5 to 2.5 Mhz.

12. The medical treatment apparatus of claim 1, wherein each of the plurality of needles has a cross sectional shape of one of a square, rhombus, and rectangle.

13. The medical treatment apparatus of claim 3, wherein the first and the second alternating current electrical signals have a voltage level below 100 volts.

14. The medical treatment apparatus of claim 3, wherein the first and the second alternating current electrical signals have a voltage level from 20 to 40 volts.

15. The medical treatment apparatus of claim 3, wherein the signal generation module applies a first alternating current electrical energy signal with a first polarity to a first subset of needles for 0.05 to 0.8 seconds and applies a second alternating current electrical energy signal with a second, opposite polarity to a second subset of needles for 0.05 to 0.8 seconds.

16. The medical treatment apparatus of claim 3, wherein the signal generation module applies a first alternating current electrical energy signal with a first polarity to a first subset of needles for 0.1 to 0.2 seconds and applies a second alternating current electrical energy signal with a second, opposite polarity to a second subset of needles for 0.1 to 0.2 seconds.

17. The medical treatment apparatus of claim 3, wherein the signal generation module applies a first alternating current electrical energy signal with a first polarity to a first subset of needles for a time interval after an off interval from 0.1 to 0.4 seconds and applies a second alternating current electrical energy signal with a second, opposite polarity to a second subset of needles for a time interval after an off interval from 0.1 to 0.4 seconds.

18. The medical treatment apparatus of claim 1, wherein the needles have a length from 0.1mm to 5.0mm and a separation between adjacent needles from about 1.0mm to 3.0mm.

19. The medical treatment apparatus of claim 1, wherein each of the plurality of needles has a cross sectional diameter of about 0.20mm to 0.40mm.

20. The medical treatment apparatus of claim 1, wherein each of the plurality of needles has a cross sectional diameter of about 0.25mm to 0.30mm.

21. The medical treatment apparatus of claim 1, wherein each of the plurality of needles is substantially non-insulated.

22. The medical treatment apparatus of claim 1, wherein each of the plurality of needles includes an insulated section and non-insulated section.

23. The medical treatment apparatus of claim 22, wherein the insulated section is longer than the non-insulated section along the needle length.

24. The medical treatment apparatus of claim 22, wherein the plurality of needles form a rectangular pattern.

25. The medical treatment apparatus of claim 3, further comprising a user interface to enable a user to select one the voltage level, alternating frequency, on time, and off time of the first and the second alternating current electrical signals.

26. The medical treatment apparatus of claim 2, further comprising a user interface to enable a user to select the needle depths that the drive module controllably moves one or more of the plurality of needles along their length.