CLAIMS:

1. A transdermal delivery device comprising:

a) a housing including

i) an external body shell comprising a fluid chamber assembly access covering detachably engaged with the external body shell;

ii) an interior compartment including an open-ended delivery outlet and a vapor producing assembly compartment; and

iii) a cartridge retaining container comprising an external covering shell and an internal cartridge compartment configured to hold a compressed gas cartridge, wherein the cartridge retaining container is detachably engaged with the external body shell;

wherein the vapor producing assembly compartment is located between the open-ended delivery outlet and the cartridge retaining container; and

b) a vapor producing assembly including

i) a fluid chamber assembly comprising a fluid container and a removable fluid container cap wherein the fluid chamber includes a liquid; and

ii) a pressure-temperature regulator assembly comprising at least two pressure regulators connected via an adaptor, wherein the pressure-temperature regulator assembly is set to reduce the pressure and increase the temperature of a therapeutically effective compressed gas from the compressed gas cartridge;

wherein the vapor producing assembly is substantially contained within the vapor producing assembly compartment.

2. The transdermal delivery device of Claim 1, wherein the device further includes a control switch assembly.

3. The transdermal delivery device of Claim 2, wherein the control switch assembly is a mechanical switch or an electronic switch.

4. The transdermal delivery device of Claim 1, wherein the liquid is water at pH 4.

5. The transdermal delivery device of Claim 1, wherein the compressed gas cartridge is a 16 g compressed gas cartridge.

6. The transdermal delivery device of Claim 1, wherein the therapeutically effective compressed gas is carbon dioxide.

7. The transdermal delivery device of Claims 1-6, wherein the pressure-temperature regulator assembly is configured to reduce the pressure of a gas to below 40 psi

8. The transdermal delivery device of Claims 1-6, wherein the pressure-temperature regulator assembly is configured to increase the temperature of the gas to at least 0°C.

9. The transdermal delivery device of Claim 1, wherein the liquid includes a therapeutic agent.

10. The transdermal delivery device of Claim 9, wherein the therapeutic agent is nicotine, an antihistamine, a β-blocker, a calcium channel blocker, a non-steroidal anti-inflammatory drug, a contraceptive, an anti-arrhythmic drug, an insulin, an antiviral, a hormone, an α-interferon, a chemotherapeutic agent, or a combination thereof.

11. A method of generating a composition comprising a substance including a therapeutically effective amount of dissolved molecular carbon dioxide using a transdermal delivery device according to Claims 1-10.

12. The method of Claim 11, wherein the therapeutically effective amount of dissolved molecular carbon dioxide is at least 600 ppm.

13. The method of Claim 11, wherein the therapeutically effective amount of dissolved molecular carbon dioxide is a supersaturated amount of dissolved molecular carbon dioxide.

14. The t method of Claim 1, wherein the liquid includes a therapeutic agent.

15. The method of Claim 14, wherein the therapeutic agent is nicotine, an antihistamine, a β-blocker, a calcium channel blocker, a non-steroidal anti-inflammatory drug, a contraceptive, an anti-arrhythmic drug, an insulin, an antiviral, a hormone, an α-interferon, a chemotherapeutic agent, or a combination thereof.

CLAIMS

1. A transdermal delivery device comprising:

   a) a housing including

      i) an external body shell comprises a fluid chamber assembly access covering detachably engaged with the external body shell;

      ii) an interior compartment including an open-ended delivery outlet and a vapor producing assembly compartment; and

      iii) a cartridge retaining container comprising an external covering shell and an internal cartridge compartment capable of holding a compressed gas cartridge, wherein the cartridge retaining container is detachably engaged with the external body shell;

      wherein the external shell defines the interior compartment; and

      wherein the vapor producing assembly compartment is located in between the open-ended delivery outlet and the cartridge retaining container; and

   b) a vapor producing assembly including

      i) a fluid chamber assembly comprises a fluid container and a removable fluid container cap; and

      ii) a pressure-temperature regulator assembly comprises two pressure regulators connected via an adaptor, the pressure-temperature regulator assembly set to reduce the pressure and increase the temperature of a compressed gas;

      wherein the vapor producing assembly is substantially contained within the vapor producing assembly compartment.

2. The transdermal delivery device of Claim 1, wherein the device further includes a control switch assembly.

3. The transdermal delivery device of Claim 2, wherein the control switch assembly is a mechanical switch or an electronic switch.

4. The transdermal delivery device of Claims 1-3, wherein the device further includes a compressed gas cartridge.

5. The transdermal delivery device of Claim 4, wherein the compressed gas cartridge is a 16 g compressed gas cartridge.

6. The transdermal delivery device of Claim 4 or 5, wherein the compressed gas cartridge contains carbon dioxide.

7. The transdermal delivery device of Claims 1-6, wherein the pressure-temperature regulator assembly is set to reduce the pressure of a gas to below 40 psi and increase the temperature of the gas to at least 0°C.

8. A transdermal delivery device comprising

a cylinder containing pressurized carbon dioxide;

a pressure-temperature regulator assembly comprises two pressure regulators connected via an adaptor configured to reduce the pressure of the pressurized carbon dioxide;

a chamber configured to supersaturate a liquid in the chamber with carbon dioxide thereby forming a therapeutic vapor; and

a treatment chamber configured to deliver the therapeutic vapor to an individual.

9. A method of treating a condition in an individual, the method comprising the step of administering a composition comprising a substance including a therapeutically effective amount of dissolved molecular carbon dioxide using a transdermal delivery device according to Claims 1-8 to the individual suffering from the condition, wherein the administration of the composition reduces a symptom associated with the condition.

10. The method of Claim 9, wherein the condition is an ischemia, a hypertension, a cardiovascular disorder, a diabetic disorder, a wound, a chronic inflammation, an arthritis, a migraine, a cellulite disorder, a pale skin disorder, or a cosmesis disorder.

11. The method of Claim 9 or 10, wherein the amount of dissolved molecular carbon dioxide is at least 600 ppm.

12. The method of Claims 9-11, wherein the liquid is water at pH 4.

13. The method of Claims 10-12, wherein the administration increases a blood flow.

14. The method of Claim 13, wherein the administration increases the blood flow by at least 10%.

15. The method of Claim 13, wherein the administration increases the blood flow by about 10% to about 100%.

16. The method of Claims 13-15, wherein the increased blood flow is for at least 5 minutes.

17. The method of Claims 13-15, wherein the increased blood flow is for about 5 minutes to about 240 minutes.

18. The method of Claims 9-17, wherein the administration decreases blood pressure.

19. The method of Claim 18, wherein the administration decreases blood pressure by at least 10%.

20. The method of Claim 18, wherein the administration decreases blood pressure by about 10% to about 100%.

21. The method of Claims 18-20, wherein the decreased blood pressure is for at least 5 minutes.

22. The method of Claims 18-21, wherein the decreased blood pressure is for about 4 hours to about 24 hours.

23. A method of transdermally administering a therapeutically effective amount of dissolved molecular carbon dioxide to an individual, the method comprising the step of administering a composition comprising a vapor including a supersaturated amount of dissolved molecular carbon dioxide to the individual using a transdermal delivery device according to Claims 1-8.

24. A method of transdermally administering a therapeutically effective amount of a therapeutic agent to an individual, the method comprising the step of administering a composition comprising a vapor including a supersaturated amount of dissolved molecular carbon dioxide and a therapeutic agent to the individual using a transdermal delivery device according to Claims 1-8.

25. The method of Claim 23 or 24, wherein the amount of dissolved molecular carbon dioxide is at least 600 ppm.

26. The method of Claims 23-25, wherein the administration increases blood flow.

27. The method of Claim 26, wherein the administration increases blood flow by at least 10%.

28. The method of Claim 26, wherein the administration increases blood flow by about 10% to about 100%.

29. The method of Claims 26-28, wherein the increased blood flow is for at least 5 minutes.

30. The method of Claims 26-28, wherein the increased blood flow is for about 5 minutes to about 240 minutes.

31. The method of Claims 23-30, wherein the administration decreases blood pressure.

32. The method of Claim 31, wherein the administration decreases blood pressure by at least 10%.

33. The method of Claim 31, wherein the administration decreases blood pressure by about 10% to about 100%.

34. The method of Claims 31-33, wherein the decreased blood pressure is for at least 5 minutes.

35. The method of Claims 31-33, wherein the decreased blood pressure is for about 4 hours to about 24 hours.