entry into the blood system, these avenues have been considered rather insignificant. See, e.g., Aulton, Pharmaceutics: The Science of Dosage Form Design (2d edition, Churchill Livingston, Harcourt publishers, 2002).

[005] The transdermal route has become one of the most successful and innovative focus's for research in drug delivery. Over 35 therapeutic agents have now been approved for sale in the U.S., and approximately 16 active ingredients have been approved for use globally. However, there is still a need for better ways to deliver a therapeutic agent by the transdermal route. For example, transdermal delivery systems on the market today are limited to small molecular weight drugs with very small daily dosages often companied by various patient discomforts. The present specification discloses a transdermal delivery system that uses a device to administer a vapor comprising liquid particles including a supersaturated amount of a dissolved therapeutic agent that enters the circulatory system via the sweat gland pore and duct system.

SUMMARY

[005a] According to an aspect of the present invention, there is provided 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 wherein the open-ended delivery outlet is configured to receive a body part; 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 a first pressure regulator is connected to a second pressure regulator, 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.

[006] Thus, aspects of the present specification disclose a transdermal device. A transdermal delivery device disclosed herein comprising a housing and a vapor producing assembly, wherein the housing encloses the vapor producing assembly.

[007] Other aspects of the present specification disclose a vapor producing assembly. A vapor producing assembly disclosed herein comprises a pressure-temperature regulator assembly and a fluid chamber assembly. A vapor producing assembly disclosed herein may optionally comprise a control switch assembly.

[008] Yet other aspects of the present specification disclose a method of producing a substance comprising a supersaturated amount of dissolved gas. A method of producing a substance disclosed herein comprises the steps of placing a substance as disclosed herein into an air-tight container; and exposing the substance to gas, wherein upon exposure, the gas dissolves into the substance in an amount greater than the substance could dissolve at 25 °C and 1 atm. The gas may be carbon dioxide. The resulting substance supersaturated with the dissolved gas can then be administered to an individual to treat a condition as disclosed herein. In another aspect, the present specification disclose a use of a substance comprising a supersaturated amount of dissolved gas to manufacture a medicament. Such a medicament can then be administered to an individual to treat a condition as disclosed herein.

[009] Still other aspects of the present specification disclose a method of transdermally administering a therapeutically effective amount of therapeutic agent. A method of transdermal administration disclosed herein comprises the step of administering a substance comprising a supersaturated amount of dissolved gas to an individual using a transdermal delivery device disclosed herein. In another aspect, a method of transdermal administration disclosed herein comprises the step of administering a substance comprising a supersaturated amount of dissolved gas and a therapeutic agent to an individual using a transdermal