

CLAIMS

1. An injection capsule (1) for medical use, comprising:
 - a closed main body (14) having an internal reservoir (140) receiving at least one medical substance to be administered to a target subject;
 - 5 ▪ a needle (20), having a tubular body defined by a lateral skirt, said tubular body having a dispensing outlet bore (200) at a first terminal end thereof and at least one inlet bore (21, 22) located at said lateral skirt (21) or at a second terminal end opposed to said first terminal end and configured to allow inlet of the medical substance within the tubular body,
- 10 wherein said needle (20) is activatable between a rest configuration, wherein it is housed within said closed main body (14), and an injection configuration, wherein it is moved outside said closed main body (14) to administer the medical substance by injection to a target subject.
- 15 2. The capsule (1) according to claim 1, wherein said main body (14), or a part (141) thereof, has a collapsible structure configured to assume a minimal encumbrance arrangement in said injection configuration of said needle (20).
3. The capsule (1) according to any of the preceding claims, wherein said needle (20), in said rest configuration, is housed inside said reservoir (140), preferably immersed in the medical substance.
- 20 4. The capsule (1) according to any of the preceding claims, which comprises recovery means (19; 17) to bring said needle (20) again within said closed main body (14) after injection, which recovery means preferably include one or more of the following: elastic means, in particular spring means; magnetic means, in particular one or more materials that are attracted to magnets or to
25 electromagnetic generated fields, or one or more permanent magnets.
5. The capsule (1A) according to the preceding claim, wherein said recovery means comprises a spirally-shaped spring (17), or a helically-shaped spring, wound about said needle (20).
- 30 6. The capsule (1) according to any of the preceding claims, which comprises a needle holding member (19) arranged at an opposite end with respect to said dispensing outlet bore (200) and preferably having a substantially plate-like or disc-like element (190) from which a needle-engaging element (191; 192) protrudes.
- 35 7. The capsule (1) according to claim 4 or 5 and according to claim 6, wherein said recovery means comprise a material that is attracted to a magnet or to an electromagnetic generated field or a magnetic element or part (190) of said needle-holding member (19).

8. The capsule (1) according to any of the preceding claims, wherein said closed main body (14) has a main body member (141) which is substantially cup-like shaped.
- 5 9. The capsule (1E) according to any of the preceding claims, wherein said closed main body (214) has a main body member which is shaped substantially like a cylindrical sector.
- 10 10. The capsule (1) according to any of the preceding claims, wherein said closed main body (14) has a pierceable base structure (146), apt to be rested, in use, onto the target body skin.
- 10 11. The capsule (1) according to the preceding claim, wherein said pierceable base structure (146) has a multi-layer construction.
- 15 12. The capsule (1) according to claim 10 or 11, wherein said pierceable base structure (146) comprises a layer (16) impregnated with a disinfectant and/or with an anaesthetic substance (25), preferably shielded by a peelable outer film (147) configured to be removed upon use.
- 20 13. The capsule (1) according to any of claims 10 to 12, wherein said pierceable base structure (146) comprises an internal reservoir (1400) of a disinfectant and/or an anaesthetic substance, preferably configured to be pierced by said needle (20) when activated from said rest configuration to said injection configuration.
- 25 14. The capsule (1B) according to any of the preceding claims, wherein said closed main body (14) includes a plurality of reservoirs (500, 700), in particular two, each receiving a medical substance to be administered to the target subject or a disinfectant and/or an anaesthetic substance, the injection capsule (1B) being preferably configured for a combined or serial administration of said substances.
- 30 15. The capsule (1B) according to the preceding claim, wherein the reservoirs (500, 700) of said plurality are separated by a rupturable septum (750).
- 35 16. The capsule (1B) according to the preceding claim, comprising rupturing means (911) arranged within said closed main body (14) and configured to break or pierce said rupturable septum (750) for controlled administration of said substances.
17. The capsule (1A) according to any of the preceding claims, comprising rupturing means (911) arranged within said closed main body (14) and configured to rupture a wall of said main body (14) after or during injection so as to allow an inlet of air.

- 5 **18.** The capsule (1C) according to any of the preceding claims, comprising a first (201) and a second (20) needle, arranged one coaxially to the other and slidably coupled to translate one inside the other, the first (201) and the second (20) needle being preferably configured to penetrate a body district of the target subject at different depths.
- 19.** The capsule (1E) according to any of the preceding claims, comprising a plurality of needles (210) configured to perform injection simultaneously.
- 10 **20.** The capsule (1) according to any of the preceding claims, wherein said needle (20), or at least one needle, has a straight profile, the configuration being preferably such that said needle (20) moves from the rest configuration to the injection configuration according to a translational, or rectilinear, path.
- 15 **21.** The capsule (1E) according to any of the preceding claims, wherein said needle (210), or at least one needle, has a curved profile, the configuration being such that the needle moves from the rest configuration to the injection configuration according to a rotational, or arcuate, path.
- 22.** The capsule (1) according to any of the preceding claims, which is of a disposable type.
- 23.** An injection device (800), comprising:
- 20 ▪ a device body (808), configured to receive at least one injection capsule (1) according to any of the preceding claims; and
- activation means (801, 802), configured to determine activation of said capsule needle (20) from the rest configuration to the injection configuration, which activation means (801, 802) is driven either automatically or by a subject or controlled by a remote interface.
- 25 **24.** The injection device (800) according to claim 23, wherein said activation means include one or more of a slider (801), a rotatable or push button (807) or an electronic command means or an electronic command means controlled by a remote interface.
- 30 **25.** The injection device (800) according to claim 23 or 24, comprising push means (802) configured to move said needle (20) from the rest configuration to the injection configuration, which push means (802) preferably comprises a sliding member, configured to act upon a needle holding member (19) of said injection capsule (1), or a pre-tensioned or pre-compressed elastic member (6).
- 35 **26.** The injection device (800) according to any of claims 23 to 25, comprising device recovery means (804, 851, 869) configured to return said needle (20) within the capsule closed main body (14) after injection, which device recovery means preferably comprises one or more of the following:

elastic means, in particular spring means; magnetic means, in particular one or more permanent magnets; electromagnetic means.

5 **27.** The injection device (800, 500, 401, 50) according to any of claims 23 to 26, comprising a local or remote control unit and/or means for communicating with a local or remote control unit.

28. The injection device (800, 500, 401, 50) according to any of claims 23 to 27, comprising means (51) for detecting a health parameter of the target subject and/or means for communicating with said means for detecting.

10 **29.** The injection device (800, 500) according to any of claims 23 to 28, wherein said device body (808, 508) is shaped, substantially like a computer mouse.

30. A kit including one or more injection capsules (1) according to any of claims 1 to 21 and an injection device according to any of claims 23 to 29.

15 **31.** A wearable device (50), in particular a smart watch, a bracelet, a chest strap or a arm or leg strap, configured to house an injection capsule (1) or an injection device (800; 401) according to any of the preceding claims and preferably comprising means (51) for detecting a health parameter of the target subject.