CLAIMS

1. A method for producing a pharmaceutical delivery system, comprising the steps of:
   a) providing surface-reacted calcium carbonate, which is a reaction product of natural ground or precipitated calcium carbonate with carbon dioxide and one or more acids in an aqueous medium, wherein the carbon dioxide is formed in situ by the acid treatment and/or is supplied from an external source;
   b) providing at least one pharmaceutically active agent or pharmaceutically inactive precursor thereof;
   c) providing at least one formulating aid;
   d) mixing the surface-reacted calcium carbonate of step a), the at least one pharmaceutically active agent or pharmaceutically inactive precursor thereof of step b) and the at least one formulating aid of step c); and
   e) compacting the mixture obtained in step d) by means of a roller compacter at a compaction pressure in the range from 4 to 20 bar; and
   f) compacting the roller compacted mixture obtained in step e) for obtaining the pharmaceutical delivery system.

2. The method of claim 1, wherein the natural ground calcium carbonate is selected from calcium carbonate containing minerals selected from the group comprising marble, chalk, dolomite, limestone and mixtures thereof; or the precipitated calcium carbonate is selected from the group comprising precipitated calcium carbonates having aragonitic, vateritic or calcitic mineralogical crystal forms and mixtures thereof.

3. The method according to any one of claims 1 or 2, wherein the surface-reacted calcium carbonate
   a) has a BET specific surface area of from 20.0 m^2/g to 200.0 m^2/g, preferably from 20.0 m^2/g to 180.0 m^2/g, more preferably from 30.0 m^2/g to 160.0 m^2/g, even more preferably from 40.0 m^2/g to 150.0 m^2/g, and most preferably from 50.0 m^2/g to 140.0 m^2/g, measured using nitrogen and the BET method according to ISO 9277; and/or
   b) comprises particles having a volume median grain diameter d_{50} of from 2.0 to 50.0 μm, preferably from 2.5 to 25.0 μm, more preferably from 2.8 to 20.0 μm, even more preferably from 3.0 to 10.0 μm, and most preferably from 4.0 to 8.0 μm; and/or

c) has an intra-particle intruded specific pore volume within the range of 0.15 to 1.35 cm^3/g, preferably of 0.30 to 1.30 cm^3/g, and most preferably of 0.40 to 1.25 cm^3/g, calculated from a mercury intrusion porosimetry measurement.

4. The method according to any one of claims 1 to 3, wherein the at least one pharmaceutically active agent or pharmaceutically inactive precursor thereof is selected from the group comprising pharmaceutically active agent or pharmaceutically inactive precursor of synthetic origin, semi-synthetic origin, natural origin and combinations thereof.

5. The method according to any one of claims 1 to 4, wherein the at least one formulating aid
   a) is at least one inner-phase lubricant and/or outer-phase lubricant; and/or
   b) is provided in a total amount from about 0.1 wt.-% to about 10.0 wt.-%, preferably from about 0.3 wt.-% to about 5.0 wt.-%, more preferably from about 0.5 wt.-% to about 2.5 wt.-% based on the total weight of the pharmaceutical delivery system.

6. The method according to any one of claims 1 to 5, wherein roller compacting step e) is carried out at a roller compaction pressure in the range from 4 to 15 bar, more preferably in the range from 4 to 10 bar and most preferably in the range from 4 to 7 bar.

7. The method according to any one of claims 1 to 6, wherein compacting step f) is a pelletizing or tableting step.

8. The method according to any one of claims 1 to 7, wherein the roller compacted mixture obtained in roller compacting step e) is subjected to a milling step before compacting step f) is carried out.

9. The method according to any one of claims 1 to 8, wherein the roller compacted mixture has a grain size of from 180 to 710 µm obtained by sieving on different mesh sizes, preferably with mesh sizes of 180 µm, 250 µm, 355 µm, 500 µm and 710 µm.

10. The method according to any one of claims 1 to 9, wherein the pharmaceutical delivery system
    a) has a friability of ≤ 1.10 %, measured according to Ph.Eur.4 on tablets compressed at 100 MPa; and/or
    b) fulfils Formula (I)

$$(FR_{RCPh}) / (FR_{RCPl}) \geq 1.2 \quad (I)$$

wherein

(FR_{RCPh}) is the friability (in %), measured according to Ph.Eur.4, of a pharmaceutical delivery system RCPh, wherein the compaction pressure in step e) is at least 15 bar;

(FR_{RCPl}) is the friability (in %), measured according to Ph.Eur.4, of a pharmaceutical delivery system RCPl, wherein the compaction pressure in step e) is less than the compaction pressure used for obtaining the pharmaceutical delivery system RCPh.

11. The method according to any one of claims 1 to 10, wherein the pharmaceutical delivery system fulfils Formula (II)

$$(FL_{RCP}) / (FL_{reference}) \geq 1.1 \qquad (II)$$

wherein

(FL_{RCP}) is the flowability (in g/s), measured according to Ph.Eur.4 at an opening diameter of 7 mm, of the pharmaceutical delivery system;

($FL_{reference}$) is the flowability (in g/s), measured according to Ph.Eur.4 at an opening diameter of 7 mm, of the same pharmaceutical delivery system, in which the surface-reacted calcium carbonate is replaced by microcrystalline cellulose.

12. The method according to any one of claims 1 to 11, wherein the pharmaceutical delivery system is a tablet, mini-tablet, capsule or pellet.

13. Use of a surface-reacted calcium carbonate for increasing the friability of a pharmaceutical delivery system, as measured by Ph. Eur. 4, wherein the surface-reacted calcium carbonate is a reaction product of natural ground or precipitated calcium carbonate with carbon dioxide and one or more acids in an aqueous medium, wherein the carbon dioxide is formed in situ by the acid treatment and/or is supplied from an external source, wherein the pharmaceutical delivery system

a) has a friability of ≤ 1.10 %, measured according to Ph.Eur.4 on tablets compressed at 100 MPa; and/or

b) fulfils Formula (II)

$$(FR_{RCPh}) / (FR_{RCPl}) \geq 1.2 (I)$$

wherein

(FR_{RCPh}) is the friability (in %), measured according to Ph.Eur.4, of a pharmaceutical delivery system RCPh, wherein the compaction pressure in step e) is at least 15 bar;

(FR_{RCPl}) is the friability (in %), measured according to Ph.Eur.4, of a pharmaceutical delivery system RCPl, wherein the compaction pressure in step c) is less than the compaction pressure used for obtaining the pharmaceutical delivery system RCPh.

14. Use of a surface-reacted calcium carbonate for increasing the flowability of a pharmaceutical delivery system, as measured by Ph. Eur. 4, wherein the surface-reacted calcium carbonate is a reaction product of natural ground or precipitated calcium carbonate with carbon dioxide and one or more acids in an aqueous medium, wherein the carbon dioxide is formed in situ by the acid treatment and/or is supplied from an external source, wherein the pharmaceutical delivery system fulfils Formula (II)

$$(FL_{RCP}) / (FL_{reference}) \geq 1.1 \qquad (II)$$

wherein

(FL_{RCP}) is the flowability (in g/s), measured according to Ph.Eur.4 at an opening diameter of 7 mm, of the pharmaceutical delivery system;

($FL_{reference}$) is the flowability (in g/s), measured according to Ph.Eur.4 at an opening diameter of 7 mm, of the same pharmaceutical delivery system, in which the surface-reacted calcium carbonate is replaced by microcrystalline cellulose.

15. A pharmaceutical delivery system, preferably a tablet, mini-tablet, capsule or pellet, obtained by the method according to any one of claims 1 to 12.