Claims

1. A method for preparing a microgel comprising the following steps:
(i) reacting a mixture comprising alginate and gelatin with an alginate physical crosslinker to form a crosslinked alginate microgel core
(ii) reacting the gelatin with crosslinker to form a crosslinked gelatin microgel, and
(iii) removing the crosslinked alginate.

2. A method according to claim 1 wherein the crosslinker in step (ii) is a 4-arm PEG succinimidyl glutarate (pentaerytheritol core).

3. A method according to claim 1 wherein step (i) is performed by air-driven droplet generation.

4. A method according to claim 3 wherein a mixture comprising alginate, gelatin and 4-arm PEG succinimidyl glutarate (pentaerytheritol core) is used in the droplet generation.

5. A method according to claim 4 wherein the mixture additionally contains cells or bioactive molecules.

6. A method according to claim 1 wherein the microgel core is additionally coated with alternate layers of at least one polycation and at least one polyanion.

7. A microgel obtained by a method according to claim 1.

8. A microgel according to claim 7, additionally comprising cells, tissue or bioactive molecules in the microgel core.

~~7.~~9. ~~A~~ microgel according to claim 7, in the form of particles of a size of 50 to 500 µm.

~~8. A microgel with a biodegradable and biocompatible core being coated by alternating layers.~~

~~9. A microgel according to claim 8, wherein said biodegradable and biocompatible core is a chemically crosslinked gelatin.~~

~~9.~~10. A microgel ~~according to claim 9~~with a chemically crosslinked gelatin core being coated by alternating layers, wherein the gelatin was chemically crosslinked with 4-arm PEG succinimidyl glutarate (pentaerytheritol core) and wherein the alternating layers are composed of at least one polycation and at least one polyanion.

~~10. A microgel according to claim 8, wherein the alternating layers are composed of at least one polycation and at least one polyanion.~~

11. A microgel according to claim ~~11~~10, wherein the polycation is chitosan or chitosan-containing material, and the polyanion is alginate or alginate-containing material.

12. A microgel according to claim ~~8~~9, wherein the number of alternating layers is at least 2.

~~12.~~13. A microgel according to claim ~~8~~9, additionally comprising cells, tissue or bioactive molecules in the microgel core.

~~13.~~14. A microgel according to claim ~~8~~9, in the form of particles of a size of 50 to 500 μm.

~~14. A method of drug delivery, tissue engineering or cell delivery wherein a microgel according to claim 7 is used.~~

~~15. A method of drug delivery, tissue engineering or cell delivery wherein a microgel according to claim 8 is used.~~

~~16. A cell delivery method according to claim 16 wherein the cells are encapsulated in the microgel core.~~

~~17. A cell delivery method according to claim 17 wherein the cells are encapsulated in the microgel core.~~

~~18. A cell delivery method according to claim 16 wherein the cells are encapsulated in the microgel core.~~

~~19. A cell delivery method according to claim 17 wherein the cells are encapsulated in the microgel core.~~