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5. The pharmaceutical composition of claim 1, wherein the at least one bioactive agent is an antagonist for Alzheimer's disease.

6. The pharmaceutical composition of claim 1, wherein the at least one bioactive agent is memantine hydrochloride.

7. The pharmaceutical composition of claim 1, wherein the at least one bioactive agent is insulin or insulin analog.

8. The pharmaceutical composition of claim 1, wherein the at least one bioactive agent is a peptide.

9. The pharmaceutical composition of claim 1, wherein said nanoparticles are further encapsulated in a gelcap.

10. The pharmaceutical composition of claim 1, wherein said second component is crosslinked.

11. The pharmaceutical composition of claim 10, wherein the second component is crosslinked at a degree of crosslinking less than 50%.

12. The pharmaceutical composition of claim 10, wherein the second component is crosslinked at a degree of crosslinking ranged between 1% and 20%.

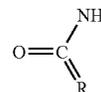
13. The pharmaceutical composition of claim 10, wherein the second component is crosslinked with a crosslinking agent selected from a group consisting of genipin, its derivatives, analogs, stereoisomers and mixtures thereof.

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14. The pharmaceutical composition of claim 10, wherein the second component is crosslinked with epoxy compounds.

15. The pharmaceutical composition of claim 1, wherein the low molecular weight chitosan has a molecular weight of 80 kDa or less.

16. The pharmaceutical composition of claim 1, wherein the low molecular weight chitosan is further grafted with a polymer having a chemical formula as:



where R is ≥ 12 .

17. The pharmaceutical composition of claim 1, wherein a surface of the nanoparticles is characterized with a positive surface charge.

18. The pharmaceutical composition of claim 1, wherein the at least one bioactive agent is heparin.

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