Claims

1. A composition comprising a solid carrier, an enzyme or a fragment thereof immobilized on the surface of the solid carrier, a protective layer to protect the enzyme or the fragment thereof by embedding the enzyme or the fragment thereof, and a functional constituent immobilized on the surface of the protective layer.

2. The composition according to claim 1, wherein the functional constituent immobilized on the surface of the protective layer i) reduces phagocytosis of the composition; ii) increases the circulation time of the composition; and/or iii) targets a tumor and/or promotes the internalization of the composition into tumor cells, when the composition is to be administered to a subject.

3. The composition according to claim 1 or 2, wherein the functional constituent immobilized on the surface of the protective layer is selected from the group consisting of an amphiphilic drug, an amino acid, a peptide, a protein or a fragment thereof, a silane copolymer, and a combination of a protein or a fragment thereof and a silane copolymer, with the proviso that the protein or the fragment thereof is not the enzyme or the fragment thereof immobilized on the surface of the solid carrier.

4. The composition according to any one of claims 1-3, wherein the functional constituent is immobilized on the surface of the protective layer by covalent binding.

5. The composition according to claim 1, wherein the functional constituent is selected from the group consisting of serum albumin or a fragment thereof; serum albumin or a fragment thereof and a polyethylene glycol/silane copolymer; a polyethylene glycol/silane copolymer; a Fc fragment of an immunoglobulin; and a Fc fragment of an immunoglobulin and a cross-linker.

6. The composition according to claim 1, wherein the functional constituent is a polyethylene glycol/silane copolymer, preferably a mSilane-PEG 2kDa or a mSilane-PEG 5kDa.

7. The composition according to claim 1, wherein the functional constituent is serum albumin or a fragment thereof.

8. The composition according to claim 1, wherein the functional constituent is selected from the group consisting of a peptide; a peptide and a cross-linker; an immunoglobulin or a fragment thereof; and an immunoglobulin or a fragment thereof and a cross-linker.

9. The composition according to any one of claims 1-8, wherein the enzyme or a fragment thereof is a hydrolase or a fragment thereof.

10. The composition according to any one of claims 1-8, wherein the enzyme or a fragment thereof is an aspariginase or a fragment thereof.

11. The composition of any one of claims 1-10, wherein the protective layer embeds the solid carrier and embeds the enzyme or a fragment thereof immobilized on the surface of the solid carrier.

12. The composition of any one of claims 1-11, wherein the functional constituent immobilized on the surface of the protective layer is not embedded by the protective layer.

13. The composition according to any one of claims 1-12, wherein the composition further comprises a chelating agent, wherein the chelating agent optionally comprises a radioactive or luminescent label.

14. The composition of any one of claims 1-13, for use as a medicament.

15. Use of the composition of any one of claims 1-13, in the manufacture of a medicament for the prevention, delay of progression or treatment of cancer in a subject, wherein the composition is to be administered in an amount that is sufficient to treat the subject.

16. The composition of claim 13, for use in a method for measuring the distribution of the composition in a subject.

17. A method of producing a composition, the composition comprising a solid carrier, an enzyme or a fragment thereof immobilized on the surface of the solid carrier, a protective layer to protect the enzyme or the fragment thereof by embedding the enzyme or the fragment thereof, and a functional constituent immobilized on the surface of the protective layer, the method comprising the following steps:

(a) providing a solid carrier;

(b) immobilizing an enzyme or a fragment thereof on the solid carrier;

(c) forming a protective layer on the surface of the solid carrier to protect the enzyme or the fragment thereof immobilized on the solid carrier;

(d) immobilizing a functional constituent on the surface of the protective layer.