CLAIMS

1. A polypeptide comprising SEQ ID NO: 1 or a functionally equivalent variant thereof resulting from the insertion or addition of one or more amino acids and/or from the deletion of one or more amino acids and/or from the conservative substitution of one or more amino acids with respect to SEQ ID NO: 1 and having a degree of identity with respect to SEQ ID NO: 1 greater than 70% and

- a threonine at the position corresponding to position 61 of SEQ ID NO: 1;
- an isoleucine at the position corresponding to position 68 of SEQ ID NO: 1;
- a glutamine at the position corresponding to position 74 of SEQ ID NO: 1; and
- an asparagine at the position corresponding to position 75 of SEQ ID NO: 1, and

wherein said functionally equivalent variant substantially preserves the tumor suppressor activity of SEQ ID NO: 1, can dimerize with Myc and inhibit its activity once found in the nucleus, being capable of translocating across the cell membrane and across the nuclear envelope

for use as a medicine.

2. Use of a polypeptide comprising SEQ ID NO: 1 or a functionally equivalent variant thereof resulting from the insertion or addition of one or more amino acids and/or from the deletion of one or more amino acids and/or from the conservative substitution of one or more amino acids with respect to SEQ ID NO: 1 and having a degree of identity with respect to SEQ ID NO: 1 greater than 70% and

- a threonine at the position corresponding to position 61 of SEQ ID NO: 1;
- an isoleucine at the position corresponding to position 68 of SEQ ID NO: 1;

- a glutamine at the position corresponding to position 74 of SEQ ID NO: 1; and
- an asparagine at the position corresponding to position 75 of SEQ ID NO: 1, and

wherein said functionally equivalent variant substantially preserves the tumor suppressor activity of SEQ ID NO: 1, can dimerize with Myc and inhibit its activity once found in the nucleus, being capable of translocating across the cell membrane and across the nuclear envelope

in the manufacture of a medicament for the treatment of cancer.

3. The polypeptide for use according to claim 1 or the use according to claim 2, wherein the functionally equivalent variant has a degree of identity with respect to SEQ ID NO: 1 greater than 90%.

4. The polypeptide for use according to any one of claims 1 or 3 or the use according to any one of claims 2 or 3, wherein the functionally equivalent variant does not contain a foreign functional protein transducing domain.

5. The polypeptide for use according to any one of claims 1, 3 or 4 or the use according to any one of claims 2-4, wherein the functionally equivalent variant does not contain a foreign cell penetrating peptide (CPP) or foreign nuclear-localization signal (NLS).

6. The polypeptide for use or the use according to claim 3, wherein the functionally equivalent variant is a polypeptide which results from the insertion or addition of one amino acid with respect to SEQ ID NO: 1.

7. The polypeptide for use according to any one of claims 1 and 3 to 6 or the use according to any one of claims 2 to 6, wherein the polypeptide or the functionally equivalent variant thereof is to be administered.

8. The polypeptide for use or the use according to claim 7, wherein the polypeptide or the functionally equivalent variant thereof is to be administered without using vehicles for delivery of the polypeptide to the cytoplasm of the cell.

9. The polypeptide for use or the use according to any one of claims 7 or 8, wherein the polypeptide or the functionally equivalent variant thereof is to be administered via endovenous route or intranasal route.

10. The use according to any one of claims 2 to 9, wherein the cancer is colon cancer, rectal cancer, lung cancer, breast cancer or brain cancer.

11. A conjugate comprising:

(i) the polypeptide comprising SEQ ID NO: 1 or a functionally equivalent variant thereof resulting from the insertion or addition of one or more amino acids and/or from the deletion of one or more amino acids and/or from the conservative substitution of one or more amino acids with respect to SEQ ID NO: 1 and having a degree of identity with respect to SEQ ID NO: 1 greater than 70% and

- a threonine at the position corresponding to position 61 of SEQ ID NO: 1;
- an isoleucine at the position corresponding to position 68 of SEQ ID NO: 1;
- a glutamine at the position corresponding to position 74 of SEQ ID NO: 1; and
- an asparagine at the position corresponding to position 75 of SEQ ID NO: 1, and

wherein said functionally equivalent variant substantially preserves the tumor suppressor activity of SEQ ID NO: 1, can dimerize with Myc and inhibit its activity once found in the

nucleus, being capable of translocating across the cell membrane and across the nuclear envelope

and

(ii) a chemical moiety that facilitates cellular uptake of the polypeptide or of the functionally equivalent variant thereof.

12. The conjugate according to claim 11, wherein the functionally equivalent variant has a degree of identity with respect to SEQ ID NO: 1 greater than 90%.

13. The conjugate according to any one of claims 11 or 12, wherein the chemical moiety that facilitates cellular uptake of the polypeptide or of the functionally equivalent variant thereof is a cell penetrating peptide and wherein said cell penetrating peptide and said polypeptide or the functionally equivalent variant thereof form a fusion protein.

14. The conjugate according to claim 13 wherein the cell-penetrating peptide sequence is selected from the group consisting of RKKRRQRRR (SEQ ID NO:7), GRKKRRQRRR (SEQ ID NO: 28) and RRRRRRLR (SEQ ID NO: 29).

15. The conjugate according to any one of claims 11 to 14 further comprising a nuclear-localization signal.

16. The conjugate according to claim 15 wherein the nuclear localization signal is selected from the group consisting of PKKKRKV (SEQ ID NO: 39), PAAKRVKLD (SEQ ID NO: 50) and KRPAATKKAGQAKKKK (SEQ ID NO: 40).

17. The conjugate according to any one of claims 11 to 14, wherein the conjugate is selected from the group consisting of SEQ ID NO: 47 and SEQ ID NO: 48.

18. A pharmaceutical composition comprising a pharmaceutically active amount of a conjugate according to any one of claims 11 to 17 and a pharmaceutically acceptable excipient.

19. The pharmaceutical composition according to claim 18, wherein the conjugate forms part of a nanoparticle.

20. A conjugate according to any one of claims 11 to 17 for use as a medicine.

21. Use of a conjugate according to any one of claims 11 to 17 in the manufacture of a medicament for the treatment of cancer.

22. Use according to claim 21, wherein the cancer is colon cancer, rectal cancer, lung cancer, breast cancer or brain cancer.

23. The conjugate for use according to claim 20 or the use according to any one of claims 21 or 22, wherein the conjugate is to be administered.

24. The conjugate for use according to claim 20 or 23 or the use according to any one of claims 21 to 23, wherein the conjugate is to be administered via endovenous route or intrasanal route.

25. A combination or composition comprising:

(i) a polypeptide comprising SEQ ID NO: 1, a functionally equivalent variant thereof resulting from the insertion or addition of one or more amino acids and/or from the deletion of one or more amino acids and/or from the conservative substitution of one or more amino acids with respect to SEQ ID NO: 1 and having a degree of identity with respect to SEQ ID NO: 1 greater than 70% and having a threonine at the position corresponding to position 61 of SEQ ID NO: 1, an isoleucine at the position corresponding to position 68 of SEQ ID NO: 1, a glutamine at the position corresponding to position 74 of SEQ ID NO: 1 and an asparagine at the position corresponding to position 75 of SEQ ID NO: 1, and wherein said functionally equivalent variant substantially preserves the tumor suppressor activity of SEQ ID NO: 1, can dimerize with Myc and inhibit its activity once found in the nucleus, being capable of translocating across the cell membrane and across the nuclear envelope, or a conjugate according to any one of claims 11 to 17 and

(ii) an antitumoral agent.

26. The combination or composition according to claim 25 wherein the antitumoral agent is selected from the group consisting of a cytotoxic agent, an antiangiogenic agent and an antimetastatic agent.

27. The combination or composition according to claim 26, wherein the antitumoral agent is selected from the group consisting of taxanes, platinum-based compounds, anthracycline antibiotics and DNA-alkylating drugs.

28. The combination or composition according to claim 27, wherein the antitumoral agent is selected from the group consisting of paclitaxel, cisplatin, doxorubicin and temozolomide.

29. The combination or composition according to any one of claims 25 to 28, wherein the functionally equivalent variant has a degree of identity with respect to SEQ ID NO: 1 greater than 90%.

30. The combination or composition according to any one of claims 25 to 29, wherein the functionally equivalent variant of SEQ ID NO: 1 is a polypeptide which results from the insertion or addition of one amino acid with respect to SEQ ID NO: 1.

31. The combination or composition according to any one of claims 25 to 29, wherein the conjugate is selected from the group consisting of SEQ ID NO: 47 and SEQ ID NO: 48.

32. A pharmaceutical composition comprising a pharmaceutically active amount of a composition according to any one of claims 25 to 31 and a pharmaceutically acceptable excipient.

33. A combination or composition according to any one of claims 25 to 31 for use as a medicine.

34. Use of a combination or composition according to any one of claims 25 to 31 in the manufacture of a medicament for the treatment of cancer.

35. Use according to claim 34, wherein the cancer is colon cancer, rectal cancer, lung cancer, breast cancer or brain cancer.

36. The combination or composition for use according to claim 33 or the use according to any one of claims 34 or 35 wherein the polypeptide comprising SEQ ID NO: 1, the functionally equivalent variant thereof or the conjugate is to be administered.