Claims

1. Use of a peptide in the manufacture of a medicament for treating diabetes and associated disorders selected from the group consisting of type I diabetes, type II diabetes, insulin resistance, diabetic retinopathy, diabetic neuropathy, diabetic nephropathy, hyperglycemia, obesity, hyperinsulinaemia and Bardet Biedl syndrome, wherein

- the peptide is capable of decreasing the FATP2 expression in adipose tissue;

- the peptide does not simultaneously comprise one methionine, one proline and one arginine;

- the peptide adopts a secondary structure which is a helix, preferably an alpha helix; and

- the peptide comprises at least 5 consecutive residues of the kinase domain of an αPKC (alpha Protein Kinase C);

- the peptide has a length from 5 to 60 amino acids, and

- the peptide sequence may comprise from 1 to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof within said sequence of a segment of the kinase domain of the PKC.

2. The use according to claim 1, wherein the peptide is modified by a chemical cross-linking.

3. The use according to claim 1 or 2, wherein the peptide has a length of at least 5 amino acids and less than 40 amino acids, preferably a length of at least 5 amino acids and less than 30 amino acids, more preferably of at least 5 amino acids and less than 25 amino acids.

4. The use according to any one of claims 1 to 3, wherein the peptide is capable of decreasing or preventing the interaction between ALMS 1 and αPKC.

5. The use according to any one of claims 1-4, wherein the peptide sequence comprises one of the following sequences: VECTMVEKRVLA (SEQ ID NO: 3) optionally comprising from 1 to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof; VECTXVEKRVLA (SEQ ID NO: 9) optionally comprising from 1 to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof; VECTMVEKXVLA (SEQ ID NO: 10) optionally comprising from 1 to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof; VECTXVEKXVLA (SEQ ID NO: 11) optionally

comprising from 1, to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof; LMYHIQQV (SEQ ID NO: 4) optionally comprising from 1 to 3 modification(s) of an amino acid selected from substitution(s) deletion(s), addition(s), and a mixture thereof; LXYHIQQV (SEQ ID NO: 12) optionally comprising from 1 to 3 modification(s) of an amino acid selected from substitution(s) deletion(s), addition(s), or a mixture thereof; LDN; SVDWWAYGVLLYEMLA (SEQ ID NO: 6) optionally comprising from 1 to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof; SVDWWAYGVLLYEXLA (SEQ ID NO: 13) optionally comprising from 1 to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof; SVXWWAYGLLYEMLA (SEQ ID NO: 52) optionally comprising from 1 to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof; EDEDELFQSIME (SEQ ID NO: 7) optionally comprising from 1 to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof; EDEDELFQSIXE (SEQ ID NO: 14) optionally comprising from 1 to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof; GERDVRE (SEQ ID NO: 8) optionally comprising from 1 to 3 modification(s) of an amino acid selected from substitution(s) deletion(s), addition(s), and a mixture thereof; GEXDVRE (SEQ ID NO: 15) optionally comprising from 1 to 3 substitution(s) deletion(s), addition(s), and a mixture thereof; GERDVXE (SEQ ID NO: 16) optionally comprising from 1 to 3 modification(s) of an amino acid selected from substitution(s) deletion(s), addition(s), and a mixture thereof; GEXDVXE (SEQ ID NO: 17) optionally comprising from 1 to 3 modification(s) of an amino acid selected from substitution(s) deletion(s), addition(s), or a mixture thereof; LDN; AFF; PDY; XDY; PEII (SEQ ID NO: 5); XEII (SEQ ID NO: 18); PAK; XAK; wherein X is any amino acid except M, P and R.

6. The use according to claim 5, wherein the peptide sequence comprises one of the following sequences: VECTMVEKRVLA (SEQ ID NO: 3) optionally comprising from 1 to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof; VECTXVEKRVLA (SEQ ID NO: 9) optionally comprising from 1 to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof; VECTMVEKXVLA (SEQ ID NO: 10) optionally comprising from 1 to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof; VECTXVEKXVLA (SEQ ID NO: 11) optionally comprising from 1, to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof; SVDWWAYGVLLYEMLA (SEQ ID NO: 6) optionally comprising from 1 to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a

mixture thereof; SVDWWAYGVLLYEXLA (SEQ ID NO: 13) optionally comprising from 1 to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof; or SVXWWAYGLLYEMLA (SEQ ID NO: 52) optionally comprising from 1 to 5 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof, wherein X is any amino acid except M, P and R.

7. The use according to anyone of claims 1-4, wherein the peptide sequence comprises one of the following sequences: VECTMVEKRVLA (SEQ ID NO: 3); VECTXVEKRVLA (SEQ ID NO: 9); VECTMVEKXVLA (SEQ ID NO: 10); VECTXVEKXVLA (SEQ ID NO: 11); LMYHIQQV (SEQ ID NO: 4); LXYHIQQV (SEQ ID NO: 12); SVDWWAYGVLLYEMLA (SEQ ID NO: 6); SVDWWAYGVLLYEXLA (SEQ ID NO: 13); EDEDELFQSIME (SEQ ID NO: 7); EDEDELFQSIXE (SEQ ID NO: 14); GERDVRE (SEQ ID NO: 8); GEXDVRE (SEQ ID NO: 15); GERDVXE (SEQ ID NO: 16); GEXDVXE (SEQ ID NO: 17); wherein X is any amino acid except M, P and R.

8. The use according to claim 7, wherein the peptide sequence comprises one of the following sequences: VECTMVEKRVLA (SEQ ID NO: 3); VECTXVEKRVLA (SEQ ID NO: 9); VECTMVEKXVLA (SEQ ID NO: 10); VECTXVEKXVLA (SEQ ID NO: 11); SVDWWAYGVLLYEMLA (SEQ ID NO: 6); SVDWWAYGVLLYEXLA (SEQ ID NO: 13); or SVXWWAYGLLYEMLA (SEQ ID NO: 52), wherein X is any amino acid except M, P and R.

9. The use according to anyone of claims 1-4, wherein the peptide sequence comprises, consists essentially in or consists in at least one of the following sequences:

a) VECTXVEKXVLALLDKXXFLTQLHS (SEQ ID NO: 20) wherein X is any amino acid except M, P and R, optionally comprising from 1 to 5 or from 1 to 3 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof;

b) VECTMVEKRVLALLDKXXFLTQLHS (SEQ ID NO: 21) wherein X is any amino acid except M, P and R, optionally comprising from 1 to 5 or from 1 to 3 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof;

c) VECTXVEKRVLALLDKPPFLTQLHS (SEQ ID NO: 22) wherein X is any amino acid except M, P and R, optionally comprising from 1 to 5 or from 1 to 3 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof;

d) VECTMVEKXVLALLDKPPFLTQLHS (SEQ ID NO: 23) wherein X is any amino acid except M, P and R, optionally comprising from 1 to 5 or from 1 to 3 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof; and

e) a peptide comprising a sequence of any segment of at least 5 to 25 consecutive residues of any sequence a) to d).

10. The use according to any one of claims 1-7, wherein the peptide sequence comprises, consists essentially in or consists in one of the following sequences:

VECTM**X**EKRVLA**X** (SEQ ID NO: 24)

VECTX**X**EKRVLA**X** (SEQ ID NO: 25)

VECTM**X**EKXVLA**X** (SEQ ID NO: 26)

VECTX**X**EKXVLA**X** (SEQ ID NO: 27)

VECTX**X**EKXVLA**X**LDKXXFLTQLHS (SEQ ID NO: 28)

VECTM**X**EKRVLA**X**LDKXXFLTQLHS (SEQ ID NO: 29)

VECTX**X**EKRVLA**X**LDKPPFLTQLHS (SEQ ID NO: 30)

VECTM**X**EKXVLA**X**LDKPPFLTQLHS (SEQ ID NO: 31)

VECTT**X**EKEVLA**X**LDKAAFLTQHS (SEQ ID NO: 53)

VECTT**X**EKEVLA**X**LDKAAF (SEQ ID NO: 54)

VEGTT**X**EKEVLA**X**LDKAAF (SEQ ID NO: 55) and

ECTT**X**EKEVLA**X**L (SEQ ID NO 56)

ECTM**X**EKKVLA**X**L (SEQ ID NO 57)

wherein the residues which are bold and underlined **X** carry the stapling and is any amino acid derivative suitable for stapling; and

wherein X is any amino acid except M, P and R, with the sequence having optionally from 1 to 5 or from 1 to 3 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof.

11. The use according to any one of claims 5-8, wherein X is an amino acid favorable to an α-helix secondary structure, or an amino acid selected from the group consisting of A, D, N, C, G, Q, E, H, L, K, F, S, W and Y, or an amino acid selected from the group consisting of A, D, N, G, Q, E, H, L, K, F, S, W and Y.

12. The use according to any one of claims 1-11, wherein said PKC is an αPKC of SEQ ID NO: 1.

13. The use according to claim 10, wherein the first bold and underlined X is R and the second bold and underlined X is S and said **R** and **S** carry the stapling.

14. The use according to any one of claims 1-13, wherein the peptide sequence comprises VECTT**R**EKEVLA**S**LDKAAFLTQLHS (SEQ ID NO: 32)

wherein **R** and **S** carry the stapling; wherein the peptide optionally further comprises from 1 to 5 or from 1 to 3 modification(s) of an amino acid selected from substitution(s), deletion(s), addition(s), and a mixture thereof.

15. The use according to claim 13 or 14, comprising 2-(7-octenyl)arginine and 2-(4-pentenyl)serine.

16. The use according to any one of claims 1-15, wherein the peptide is used in combination with one or more additional active drugs preferably selected from the group consisting of an anti-diabetic drug, a hypolipidemic agent, an anti-obesity agent, an anti-hypertensive agent, an anti-steatotic drug, an anti-inflammatory agent, and an agonist of peroxisome proliferator-activator receptors.