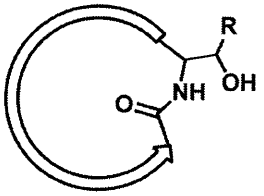
12. The method of claim 11, wherein the reducing agent is $SmI_2$ solution in THF or $SmI_2$ solution in TFE.

13. The method of any one of claims 10 to 12, wherein the organic acid is acetic acid, propionic acid, isobutyric acid or butyric acid.

14. A method of preparing a serinyl- or threonyl-containing cyclic peptide of formula (6)

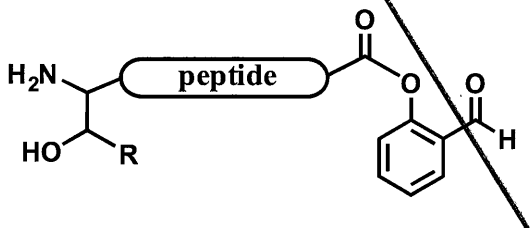



(6),

where the peptide contains serine (Ser) or threonine (Thr),

comprising:

reacting the C-terminal Ser- or Thr-containing salicylaldehyde ester peptide of formula (1B)




(1B)

in a pyridine/organic acid mixture; and

adding an acidic deprotecting agent to form the serinyl- or threonyl-containing cyclic peptide of formula (6),

wherein R is a substituted or unsubstituted $C_1$-$C_{10}$ alkyl, substituted or unsubstituted $C_2$-$C_{15}$ alkenyl, substituted or unsubstituted $C_2$-$C_{15}$ alkynyl, substituted or unsubstituted $C_3$-$C_{15}$ cycloalkyl, substituted or unsubstituted $C_3$-$C_{15}$ cycloalkenyl, substituted or unsubstituted $C_3$-$C_{15}$ heterocycloalkyl, substituted or unsubstituted $C_3$-$C_{15}$ heterocycloalkenyl, substituted or unsubstituted $C_6$-$C_{15}$ aryl, or substituted or unsubstituted $C_5$-$C_{15}$ heteroaryl, or a side chain of an amino acid.

15. The method of claim 14, wherein the acidic deprotecting agent to deprotect the oxazolidine ring is trifluoroacetic acid (TFA).

16. The method of claim 14 or 15, wherein the organic acid is acetic acid, propionic acid, isobutyric acid, or butyric acid.

17. A method of preparing a C-terminal salicylaldehyde ester peptide in solid phase, comprising:

(i) mixing 2-hydroxycinnamic acid and 4-methylbenzhydrylamine hydrochloride salt (MBHA) resin in the presence of benzotriazol-1-yl-oxytripyrrolidinophosphonium hexafluorophosphate (PyBOP) and a tertiary amine to form a 2-hydroxycinnamamide linker on the resin;

(ii) coupling a Boc-amino acid to the 2-hydroxycinnamamide linker-resin, followed by standard Boc solid phase peptide synthesis to form a peptidyl 2-hydroxycinnamamide phenolic ester on the resin, where Boc represents tert-butoxycarbonyl protecting group;

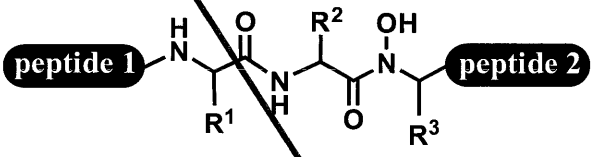
(iii) adding a cleavage agent to release the peptidyl 2-hydroxycinnamamide phenolic ester from the resin; and

(iv) ozonizing the C=C bond of the peptidyl 2-hydroxycinnamamide phenolic ester to obtain the C-terminal salicylaldehyde ester peptide.

18. The method of claim 17, wherein the tertiary amine is diisopropylethylamine (DIEA).

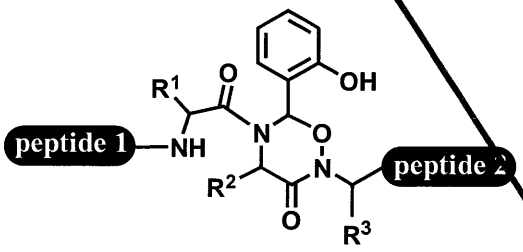
19. The method of claim 17 or 18, wherein the cleavage agent is hydrofluoric acid or trifluoromethanesulfonic acid-trifluoroacetic acid mixture.

20. A method of preparing a polypeptide or protein of formula (7)




(7),

comprising reacting a compound of formula (4)




(4)

with trifluoroacetic acid (TFA),

wherein each of $R^1$, $R^2$ and $R^3$ is independently selected from the group consisting of H, a substituted or unsubstituted $C_1$-$C_{10}$ alkyl, substituted or unsubstituted $C_2$-$C_{15}$ alkenyl, substituted or unsubstituted $C_2$-$C_{15}$ alkynyl, substituted or unsubstituted $C_3$-

$C_{15}$ cycloalkyl, substituted or unsubstituted $C_3$-$C_{15}$ cycloalkenyl, substituted or unsubstituted $C_3$-$C_{15}$ heterocycloalkyl, substituted or unsubstituted $C_3$-$C_{15}$ heterocycloalkenyl, substituted or unsubstituted $C_6$-$C_{15}$ aryl, or substituted or unsubstituted $C_6$-$C_{15}$ heteroaryl, and a side chain of an amino acid.

12. The method of claim 11, wherein the reducing agent is $SmI_2$ solution in THF or $SmI_2$ solution in TFE.

13. The method of any one of claims 10 to 12, wherein the organic acid is acetic acid, propionic acid, isobutyric acid or butyric acid.