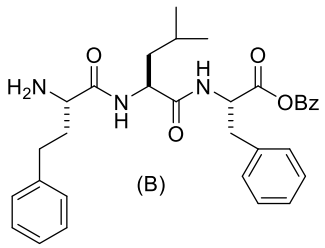
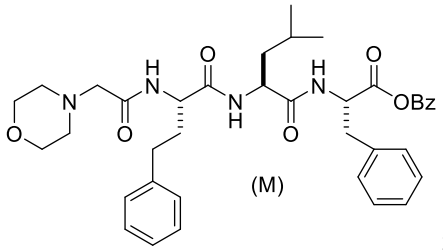
## Claims

1. A method of synthesizing carfilzomib comprising

(a) admixing compound (B) or a pharmaceutically acceptable salt thereof and 4-morpholinoacetic acid to form compound (M):



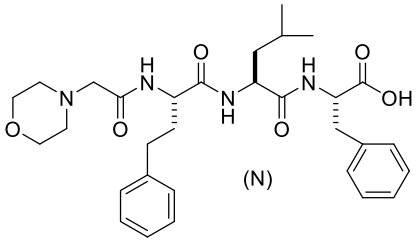

(B)




(M)

;

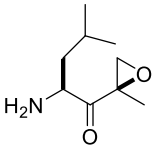
(b) treating compound (M) with hydrogen in the presence of palladium on carbon to form compound (N):




(N)

;

(c) admixing compound (N) and compound (E) or a pharmaceutically acceptable salt thereof to form carfilzomib




(E)

.

2. The method of claim 1, wherein compound (B) is a trifluoroacetic acid salt.

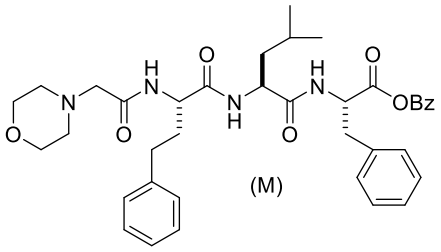
3. The method of claim 1 or 2, wherein step (a) further comprises benzotriazol-1-yl-oxytripyrrolidinophosphonium hexafluorophosphate (PyBOP).

4. The method of any one of claims 1 to 3, wherein compound (E) is a trifluoroacetate salt.

5. The method of any one of claims 1 to 4, wherein step (c) further comprises benzotriazol-1-yl-oxytripyrrolidinophosphonium hexafluorophosphate (PyBOP).

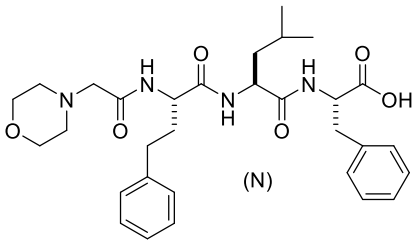
6. The method of any one of claims 1 to 5, further comprising (d) isolating the carfilzomib via filtration.

7. Use of intermediate M




for the synthesis of carfilzomib, or a pharmaceutically acceptable salt thereof.

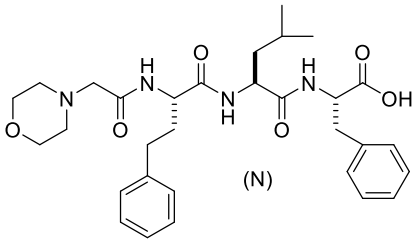
8. Use of intermediate N



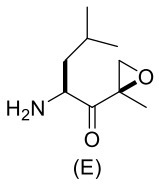

for the synthesis of carfilzomib, or a pharmaceutically acceptable salt thereof.

9. A method of synthesizing carfilzomib, the method comprising

(a) admixing compound (N) or a pharmaceutically acceptable salt thereof



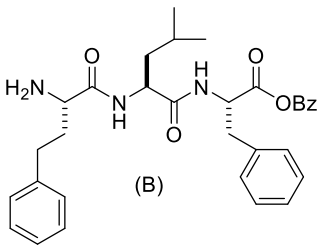

and compound (E) or a pharmaceutically acceptable salt thereof to form carfilzomib

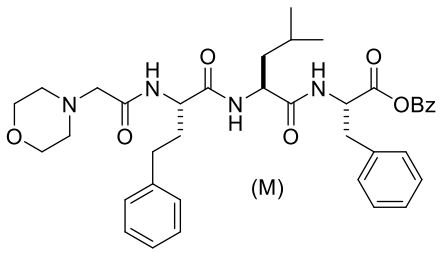



.

10. The method of claim 9 further comprising

(b) admixing compound (B) or a pharmaceutically acceptable salt thereof and 4-morpholinoacetic acid to form compound (M):



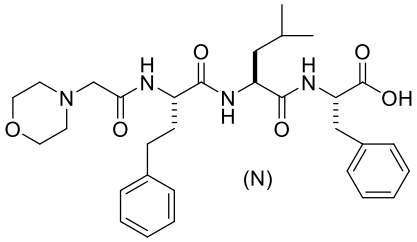

; and

(c) treating compound (M) with hydrogen in the presence of palladium on carbon to form compound (N).

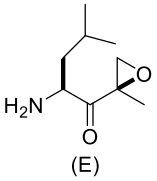
11. The method of claim 10 wherein the palladium on carbon in step (b) is about 10% palladium on carbon.

12. Carfilzomib prepared by the process of

admixing compound (N) or a pharmaceutically acceptable salt thereof



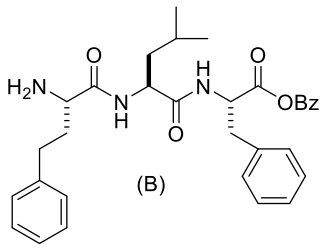

and compound (E) or a pharmaceutically acceptable salt thereof to form carfilzomib

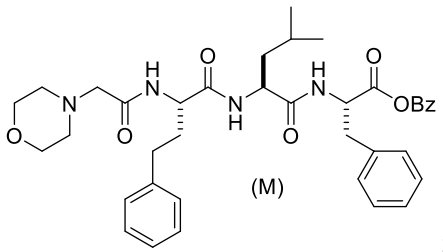



.

13. Carfilzomib prepared by the process of

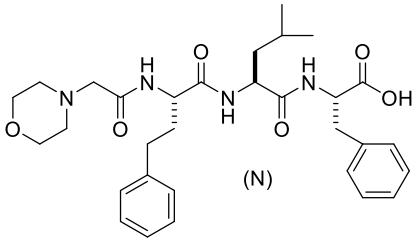
(a) admixing compound (B) or a pharmaceutically acceptable salt thereof and 4-morpholinoacetic acid to form compound (M):



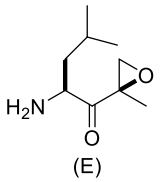

;

(b) treating compound (M) with hydrogen in the presence of palladium on carbon to form compound (N):




; and

(c) admixing compound (N) and compound (E) or a pharmaceutically acceptable salt thereof

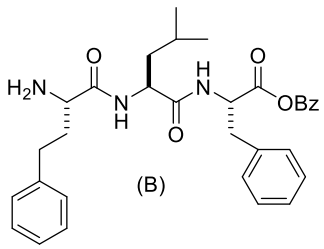


(E)

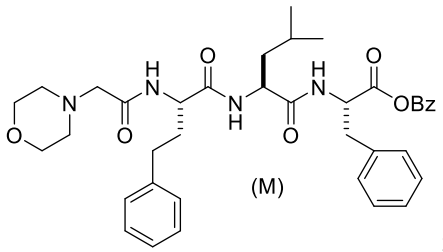
to prepare carfilzomib.

14. A pharmaceutical composition comprising carfilzomib prepared by the process of

(a) admixing compound (B) or a pharmaceutically acceptable salt thereof and 4-morpholinoacetic acid to form compound (M):



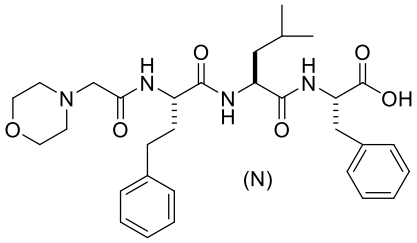
(B)



(M)

;

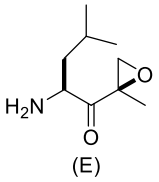
(b) treating compound (M) with hydrogen in the presence of palladium on carbon to form compound (N):



(N)

; and

(c) admixing compound (N) and compound (E) or a pharmaceutically acceptable salt thereof



(E)

.