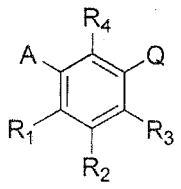
## CLAIMS

1. A compound represented by the formula:




or a pharmaceutically acceptable salt thereof, wherein

A is $C_5$ alkyl, $C_6$ alkyl, $C_5$ alkenyl, $C_6$ alkenyl, $C(O)-(CH_2)_n-CH_3$ or $CH(OH)-(CH_2)_n-CH_3$ wherein n is 3 or 4;

$R_1$ is H, F or OH;

$R_2$ is $C_5$ alkyl, $C_6$ alkyl, $C_5$ alkenyl, $C_6$ alkenyl, $C(O)-(CH_2)_n-CH_3$ or $CH(OH)-(CH_2)_n-CH_3$ wherein n is 3 or 4;

$R_3$ is H, F, OH or $CH_2Ph$;

$R_4$ is H, F or OH;

Q is

1) $(CH_2)_mC(O)OH$ wherein m is 1 or 2,

2) $CH(CH_3)C(O)OH$,

3) $C(CH_3)_2C(O)OH$,

4) $CH(F)-C(O)OH$,

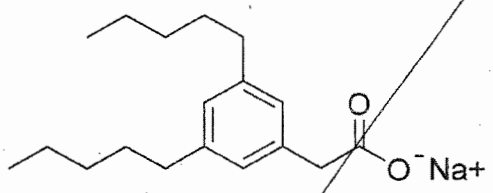
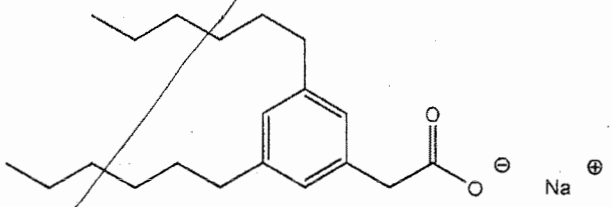
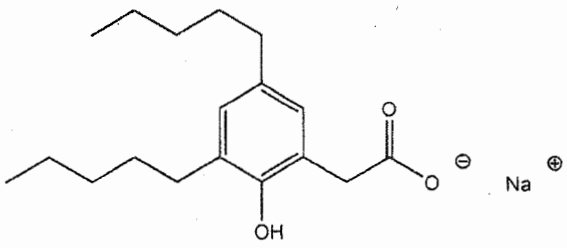
5) $CF_2-C(O)OH$, or

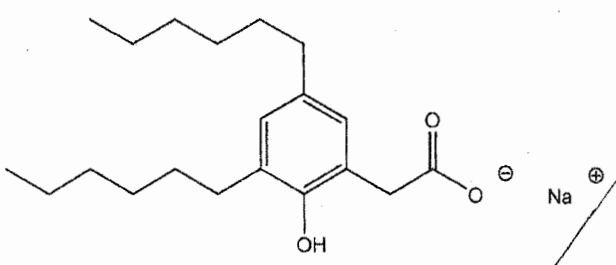
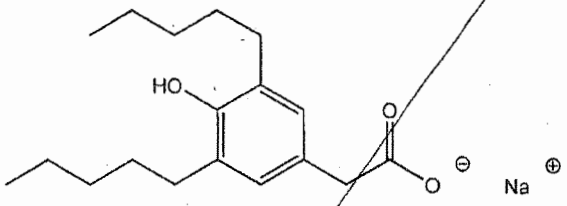
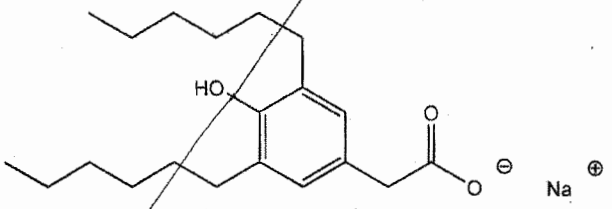
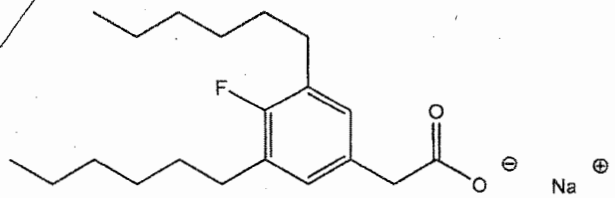
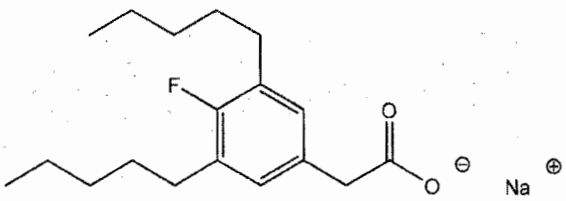
6) $C(O)-C(O)OH$.

2. The compound according to claim 1, wherein the pharmaceutically acceptable salt of said compound is sodium, potassium, lithium, ammonium, calcium, magnesium, manganese, zinc, iron, or copper.

3. The compound of claim 2, wherein the pharmaceutically acceptable salt of said compound is sodium.

4. The compound according to claim 1 wherein said compound is one of the following compounds:

| | |
|---|---|
| Compound 1 |  |
| Compound 2 |  |
| Compound 3 |  |

| | |
|---|---|
| Compound 4 |  |
| Compound 5 |  |
| Compound 6 |  |
| Compound 7 |  |
| Compound 8 |  |

5. A method for reducing the collagen production in cells, comprising contacting the cells with a therapeutically effective amount of a compound as defined in any one of claims 1-4.

6. A method for preventing and/or slowing progression of and/or treating a fibrotic disease in a subject in need thereof, comprising the administration of a therapeutically effective amount of a compound as defined in any one of claims 1-4.

7. The method of claim 6, wherein the fibrotic disease is pulmonary fibrosis, liver fibrosis, skin fibrosis, renal fibrosis, pancreas fibrosis, systemic sclerosis, cardiac fibrosis or macular degeneration.

8. The method of claim 6 or 7, wherein the therapeutically effective amount is between about 1 to about 50 mg/kg, the compound is administered orally, and the subject is human.

9. The method of claim 8, wherein the therapeutically effective amount is between about 1 to about 20 mg/kg.

10. The method according to claim 7, wherein the pulmonary fibrosis is idiopathic pulmonary fibrosis, sarcoidosis, cystic fibrosis, familial pulmonary fibrosis, silicosis, asbestosis, coal worker's pneumoconiosis, carbon pneumoconiosis, hypersensitivity pneumonitides, pulmonary fibrosis caused by inhalation of inorganic dust, pulmonary fibrosis caused by an infectious agent, pulmonary fibrosis caused by inhalation of noxious gases, aerosols, chemical dusts, fumes or vapors, drug-induced interstitial lung disease, pulmonary hypertension or chronic obstructive pulmonary disease.

11. A method according to claim 7, wherein the liver fibrosis is resulting from a chronic liver disease, hepatitis B virus infection, hepatitis C virus infection, hepatitis D virus infection, schistosomiasis, alcoholic liver disease or non-alcoholic steatohepatitis, obesity, diabetes, protein malnutrition, coronary artery disease, auto-immune hepatitis, cystic fibrosis, alpha-1-antitrypsin deficiency, primary biliary cirrhosis, drug reaction and exposure to toxins.

12. A method according to claim 7, wherein the skin fibrosis is scarring, hypertrophic scarring, keloid scarring, dermal fibrotic disorder, wound healing, delayed wound healing, psoriasis or scleroderma.

13. The method of claim 12, wherein said scarring derives from a burn, a trauma, a surgical injury, a radiation or an ulcer.

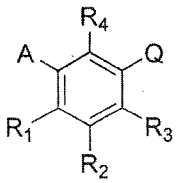
14. The method of claim 13, wherein said ulcer is diabetic foot ulcer, venous leg ulcer or pressure ulcer.

15. A method according to claim 7, wherein the kidney fibrosis is resulting from dialysis following kidney failure, catheter placement, a nephropathy, glomerulosclerosis, glomerulonephritis, chronic renal insufficiency, acute kidney injury, chronic kidney diseases, end stage renal disease or renal failure.

16. A method for antagonizing collagen secretion or collagen deposition in an organ of a mammal comprising administering a therapeutically effective amount of a compound as defined in any one of claims 1-4, to the mammal in need thereof, wherein the organ is lung, liver, kidney, pancreas, skin or heart.

17. The method according to any one of claims 5-16, wherein the compound is administered in combination with a therapeutically effective amount of second compound, the second compound is an immunosuppressive drug, an anti-inflammatory drug, a cytokine, a monoclonal antibody, a multiple receptor tyrosine kinase inhibitor, an antioxidant, an enzyme inhibitor, an integrin inhibitor, an hypertensive inhibitor, a lipid receptor modulator or an anti-diabetic drug.

18. A kit for preventing and/or slowing progression of and/or treating fibrotic disease in a subject in need thereof, comprising a compound represented by the formula:




or a pharmaceutically acceptable salt thereof, wherein

A is $C_5$ alkyl, $C_6$ alkyl, $C_5$ alkenyl, $C_6$ alkenyl, $C(O)-(CH_2)_n-CH_3$ or $CH(OH)-(CH_2)_n-CH_3$ wherein n is 3 or 4;

$R_1$ is H, F or OH;

$R_2$ is $C_5$ alkyl, $C_6$ alkyl, $C_5$ alkenyl, $C_6$ alkenyl, $C(O)-(CH_2)_n-CH_3$ or $CH(OH)-(CH_2)_n-CH_3$ wherein n is 3 or 4;

$R_3$ is H, F, OH or $CH_2Ph$;

$R_4$ is H, F or OH;

Q is

1) $(CH_2)_mC(O)OH$ wherein m is 1 or 2,

2) $CH(CH_3)C(O)OH$,

3) $C(CH_3)_2C(O)OH$,

4) CH(F)-C(O)OH,

5) $CF_2$-C(O)OH, or

6) C(O)-C(O)OH;

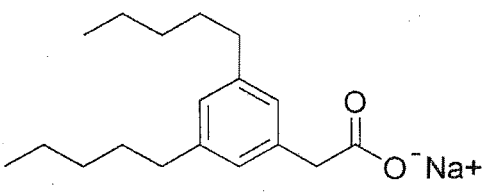
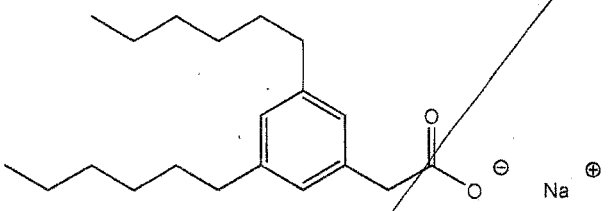
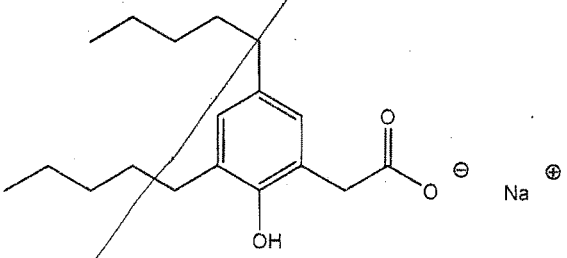
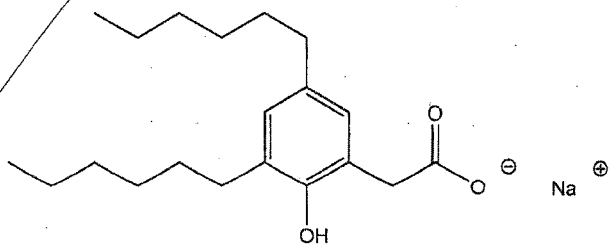
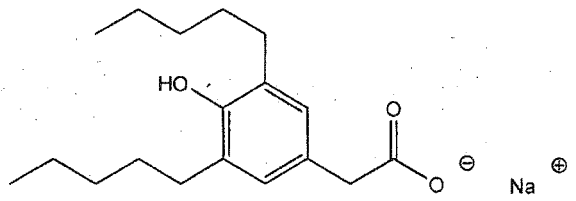
and instructions for administering a therapeutically effective amount of the compound to the subject suffering from said fibrotic disease.

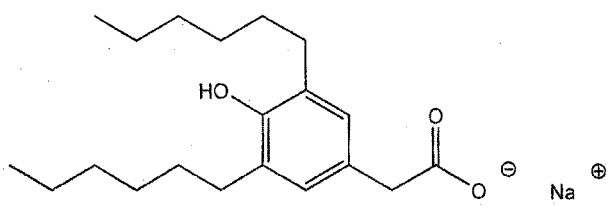
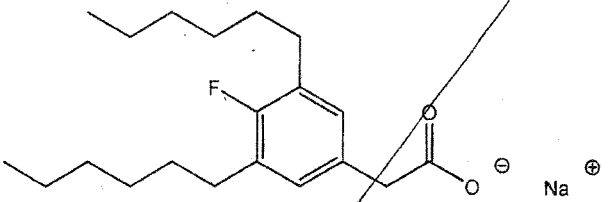
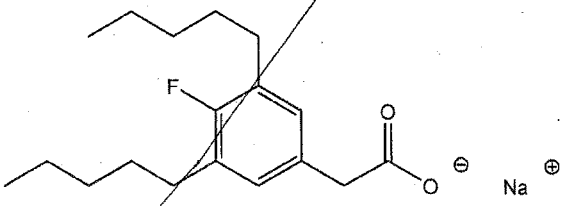
19. The kit of claim 17, wherein the fibrotic disease is pulmonary fibrosis, liver fibrosis, skin fibrosis, renal fibrosis, pancreas fibrosis, systemic sclerosis, cardiac fibrosis or macular degeneration.

20. The kit of claim 17 or 18, further comprises instructions for administering between about 1 to about 50 mg/kg of the compound daily and orally to the subject who is a human.

21. The kit of claim 18, further comprises instructions for administering between about 0.01 to about 10 % (w/w) of the compound daily and topically to the subject who is a human, and wherein the fibrotic disease is skin fibrosis.

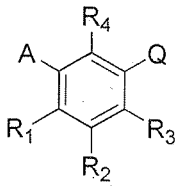
22. The kit of any one of claims 17 to 20, wherein the compound is one of the following compounds:

| | |
|---|---|
| Compound 1 |  |
| Compound 2 |  |
| Compound 3 |  |
| Compound 4 |  |
| Compound 5 |  |

| | |
|---|---|
| Compound 6 |  |
| Compound 7 |  |
| Compound 8 |  |

## CLAIMS

1. A pharmaceutically acceptable salt of a compound represented by the formula:




wherein

A is $C_5$ alkyl, $C_6$ alkyl, $C_5$ alkenyl, $C_6$ alkenyl, $C(O)-(CH_2)_n-CH_3$ or $CH(OH)-(CH_2)_n-CH_3$ wherein n is 3 or 4;

$R_1$ is H, F or OH;

$R_2$ is $C_5$ alkyl, $C_6$ alkyl, $C_5$ alkenyl, $C_6$ alkenyl, $C(O)-(CH_2)_n-CH_3$ or $CH(OH)-(CH_2)_n-CH_3$ wherein n is 3 or 4;

$R_3$ is H, F, OH or $CH_2Ph$;

$R_4$ is H, F or OH;

Q is

1) $(CH_2)_mC(O)OH$ wherein m is 1 or 2,

2) $CH(CH_3)C(O)OH$,

3) $C(CH_3)_2C(O)OH$,

4) $CH(F)-C(O)OH$,

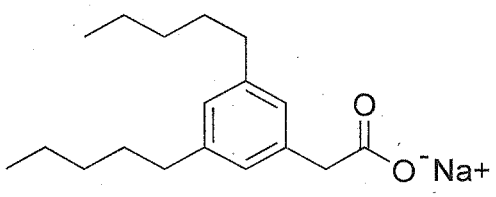
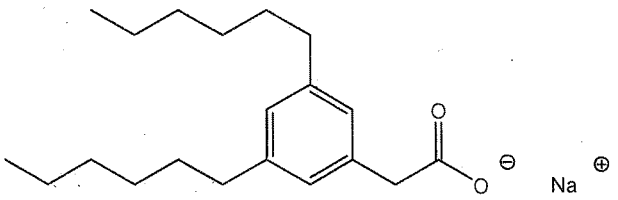
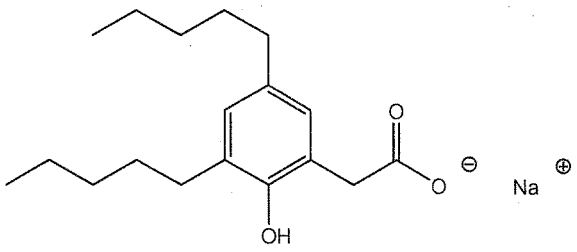
5) $CF_2-C(O)OH$, or

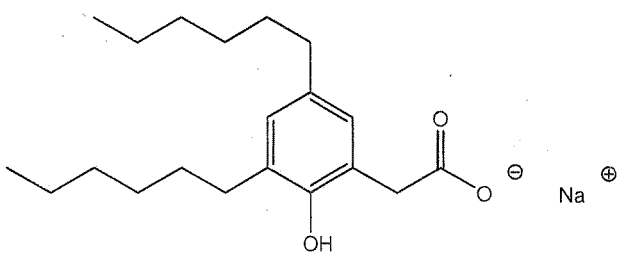
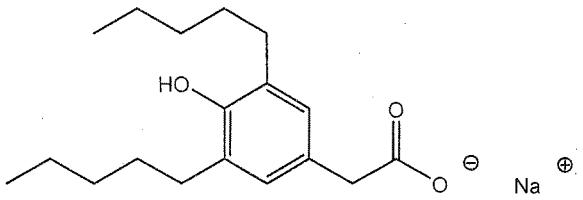
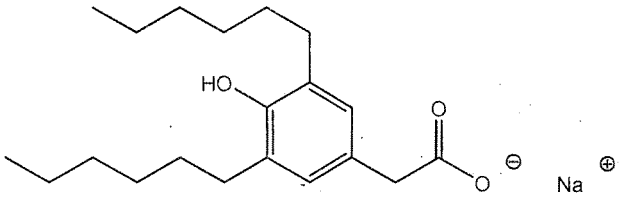
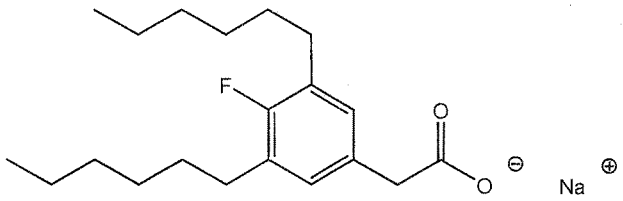
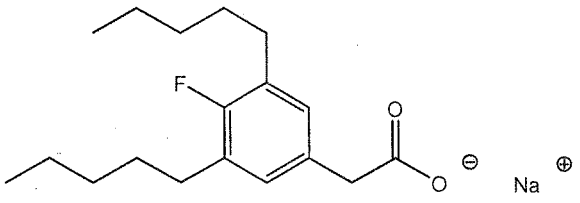
6) $C(O)-C(O)OH$.

2. The compound according to claim 1, wherein the pharmaceutically acceptable salt of said compound is sodium, potassium, lithium, ammonium, calcium, magnesium, manganese, zinc, iron, or copper.

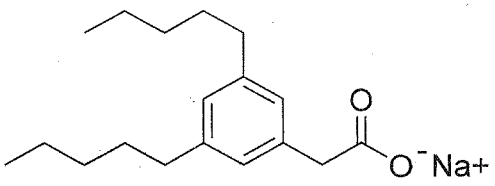
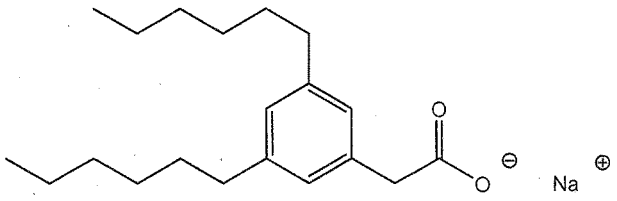
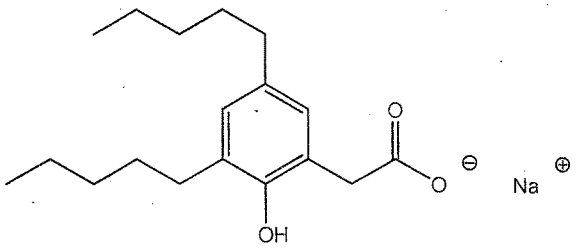
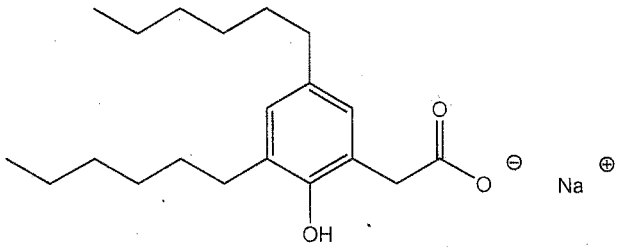
3. The compound of claim 2, wherein the pharmaceutically acceptable salt of said compound is sodium.

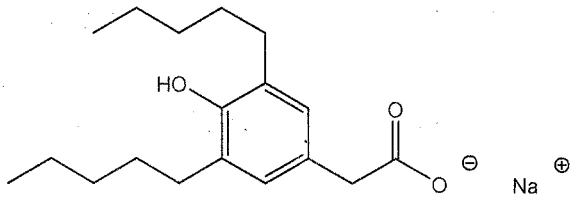
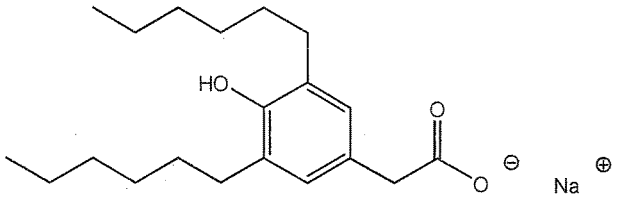
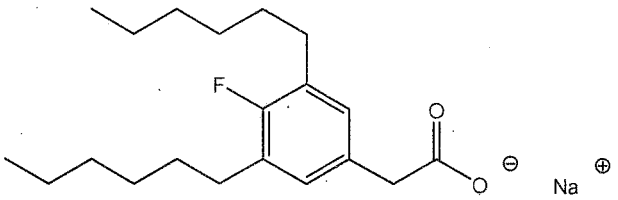
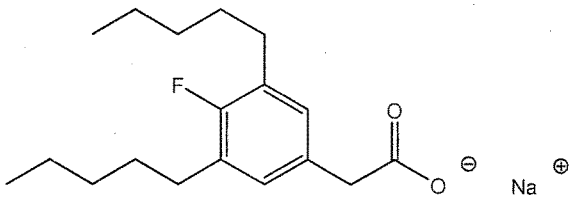
4. The compound according to claim 1 wherein said compound is one of the following compounds:

| | |
|---|---|
| Compound 1 |  |
| Compound 2 |  |
| Compound 3 |  |

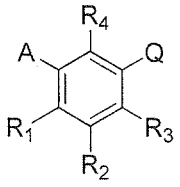
| | |
|---|---|
| Compound 4 |  |
| Compound 5 |  |
| Compound 6 |  |
| Compound 7 |  |
| Compound 8 |  |

5. A compound which is a free acid form or a pharmaceutically acceptable salt of one of the following compounds:

| | |
|---|---|
| Compound 1 |  |
| Compound 2 |  |
| Compound 3 |  |
| Compound 4 |  |

| | |
|---|---|
| Compound 5 |  |
| Compound 6 |  |
| Compound 7 |  |
| Compound 8 |  |

6. Use of a therapeutically effective amount of a compound represented by the formula:



or a pharmaceutically acceptable salt thereof, wherein

A is $C_5$ alkyl, $C_6$ alkyl, $C_5$ alkenyl, $C_6$ alkenyl, $C(O)-(CH_2)_n-CH_3$ or $CH(OH)-(CH_2)_n-CH_3$ wherein n is 3 or 4;

$R_1$ is H, F or OH;

$R_2$ is $C_5$ alkyl, $C_6$ alkyl, $C_5$ alkenyl, $C_6$ alkenyl, $C(O)-(CH_2)_n-CH_3$ or $CH(OH)-(CH_2)_n-CH_3$ wherein n is 3 or 4;

$R_3$ is H, F, OH or $CH_2Ph$;

$R_4$ is H, F or OH;

Q is

1) $(CH_2)_mC(O)OH$ wherein m is 1 or 2,

2) $CH(CH_3)C(O)OH$,

3) $C(CH_3)_2C(O)OH$,

4) $CH(F)-C(O)OH$,

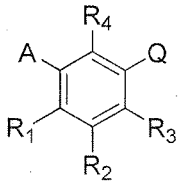
5) $CF_2-C(O)OH$, or

6) $C(O)-C(O)OH$;

in the manufacture of a medicament for reducing collagen production in cells, wherein said compound is contacted with the cells.

7. Use of a therapeutically effective amount of a compound as defined in any one of claims 1 to 5 in the manufacture of a medicament for reducing collagen production in cells, wherein said compound is contacted with the cells.

8. Use of a therapeutically effective amount of a compound represented by the formula:




or a pharmaceutically acceptable salt thereof, wherein

A is $C_5$ alkyl, $C_6$ alkyl, $C_5$ alkenyl, $C_6$ alkenyl, $C(O)-(CH_2)_n-CH_3$ or $CH(OH)-(CH_2)_n-CH_3$ wherein n is 3 or 4;

$R_1$ is H, F or OH;

$R_2$ is $C_5$ alkyl, $C_6$ alkyl, $C_5$ alkenyl, $C_6$ alkenyl, $C(O)-(CH_2)_n-CH_3$ or $CH(OH)-(CH_2)_n-CH_3$ wherein n is 3 or 4;

$R_3$ is H, F, OH or $CH_2Ph$;

$R_4$ is H, F or OH;

Q is

1) $(CH_2)_mC(O)OH$ wherein m is 1 or 2,

2) $CH(CH_3)C(O)OH$,

3) $C(CH_3)_2C(O)OH$,

4) $CH(F)-C(O)OH$,

5) $CF_2-C(O)OH$, or

6) C(O)-C(O)OH; in the manufacture of a medicament for preventing and/or slowing progression of and/or treating a fibrotic disease in a subject in need thereof.

9. Use of a therapeutically effective amount of a compound as defined in any one of claims 1 to 5; in the manufacture of a medicament for preventing and/or slowing progression of and/or treating a fibrotic disease in a subject in need thereof.

10. The use of claim 8 or 9, wherein the fibrotic disease is pulmonary fibrosis, liver fibrosis, skin fibrosis, renal fibrosis, pancreas fibrosis, systemic sclerosis, cardiac fibrosis or macular degeneration.

11. The use of claim 9 or 10, wherein the therapeutically effective amount is between about 1 to about 50 mg/kg, the compound is administered orally, and the subject is human.

12. The use of claim 11, wherein the therapeutically effective amount is between about 1 to about 20 mg/kg.

13. The use according to claim 10, wherein the pulmonary fibrosis is idiopathic pulmonary fibrosis, sarcoidosis, cystic fibrosis, familial pulmonary fibrosis, silicosis, asbestosis, coal worker's pneumoconiosis, carbon pneumoconiosis, hypersensitivity pneumonitides, pulmonary fibrosis caused by inhalation of inorganic dust, pulmonary fibrosis caused by an infectious agent, pulmonary fibrosis caused by inhalation of noxious gases, aerosols, chemical dusts, fumes or vapors, drug-induced interstitial lung disease, pulmonary hypertension or chronic obstructive pulmonary disease.

14. The use according to claim 10, wherein the liver fibrosis is resulting from a chronic liver disease, hepatitis B virus infection, hepatitis C virus infection, hepatitis D virus infection, schistosomiasis, alcoholic liver disease or non-alcoholic steatohepatitis, obesity, diabetes, protein malnutrition, coronary artery disease, auto-immune hepatitis, cystic fibrosis, alpha-1-antitrypsin deficiency, primary biliary cirrhosis, drug reaction and exposure to toxins.

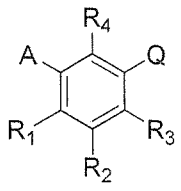
15. The use according to claim 10, wherein the skin fibrosis is scarring, hypertrophic scarring, keloid scarring, dermal fibrotic disorder, wound healing, delayed wound healing, psoriasis or scleroderma.

16. The use of claim 15, wherein said scarring derives from a burn, a trauma, a surgical injury, a radiation or an ulcer.

17. The use of claim 16, wherein said ulcer is diabetic foot ulcer, venous leg ulcer or pressure ulcer.

18. The use according to claim 10, wherein the kidney fibrosis is resulting from dialysis following kidney failure, catheter placement, a nephropathy, glomerulosclerosis, glomerulonephritis, chronic renal insufficiency, acute kidney injury, chronic kidney diseases, end stage renal disease or renal failure.

19. Use of a therapeutically effective amount of a compound to the mammal in need thereof, wherein the organ is lung, liver, kidney, pancreas, skin or heart, wherein the compound is represented by the formula:




or a pharmaceutically acceptable salt thereof, wherein

A is $C_5$ alkyl, $C_6$ alkyl, $C_5$ alkenyl, $C_6$ alkenyl, $C(O)-(CH_2)_n-CH_3$ or $CH(OH)-(CH_2)_n-CH_3$ wherein n is 3 or 4;

$R_1$ is H, F or OH;

$R_2$ is $C_5$ alkyl, $C_6$ alkyl, $C_5$ alkenyl, $C_6$ alkenyl, $C(O)-(CH_2)_n-CH_3$ or $CH(OH)-(CH_2)_n-CH_3$ wherein n is 3 or 4;

$R_3$ is H, F, OH or $CH_2Ph$;

$R_4$ is H, F or OH;

Q is

1) $(CH_2)_mC(O)OH$ wherein m is 1 or 2,

2) $CH(CH_3)C(O)OH$,

3) $C(CH_3)_2C(O)OH$,

4) $CH(F)-C(O)OH$,

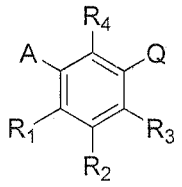
5) $CF_2$-C(O)OH, or

6) C(O)-C(O)OH; in the manufacture of a medicament for antagonizing collagen secretion or collagen deposition in an organ of a mammal.

20. Use of a therapeutically effective amount of a compound as defined in any one of claims 1 to 5, in the manufacture of a medicament for antagonizing collagen secretion or collagen deposition in an organ of a mammal, , wherein the organ is lung, liver, kidney, pancreas, skin or heart.

21. The use according to any one of claims 6 to 20, wherein the compound is to be administered in combination with a therapeutically effective amount of second compound, the second compound is an immunosuppressive drug, an anti-inflammatory drug, a cytokine, a monoclonal antibody, a multiple receptor tyrosine kinase inhibitor, an antioxidant, an enzyme inhibitor, an integrin inhibitor, an hypertensive inhibitor, a lipid receptor modulator or an anti-diabetic drug.

22. A kit for preventing and/or slowing progression of and/or treating fibrotic disease in a subject in need thereof, comprising a compound represented by the formula:




or a pharmaceutically acceptable salt thereof, wherein

A is $C_5$ alkyl, $C_6$ alkyl, $C_5$ alkenyl, $C_6$ alkenyl, C(O)-$(CH_2)_n$-$CH_3$ or CH(OH)-$(CH_2)_n$-$CH_3$ wherein n is 3 or 4;

$R_1$ is H, F or OH;

$R_2$ is $C_5$ alkyl, $C_6$ alkyl, $C_5$ alkenyl, $C_6$ alkenyl, C(O)-$(CH_2)_n$-$CH_3$ or CH(OH)-$(CH_2)_n$-$CH_3$ wherein n is 3 or 4;

$R_3$ is H, F, OH or $CH_2Ph$;

$R_4$ is H, F or OH;

Q is

1) $(CH_2)_mC(O)OH$ wherein m is 1 or 2,

2) $CH(CH_3)C(O)OH$,

3) $C(CH_3)_2C(O)OH$,

4) CH(F)-C(O)OH,

5) $CF_2$-C(O)OH, or

6) C(O)-C(O)OH;

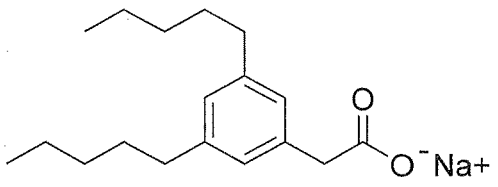
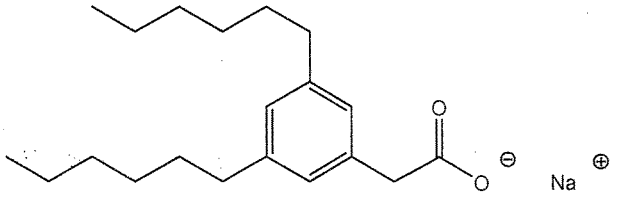
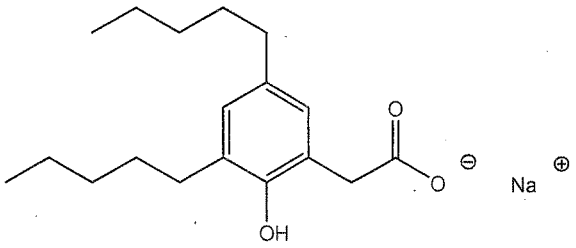
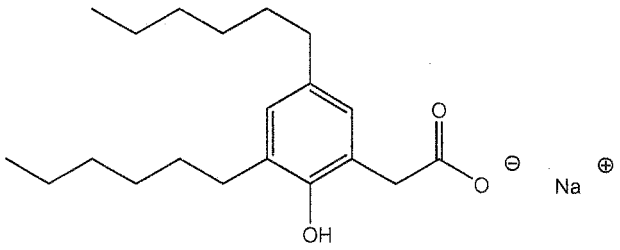
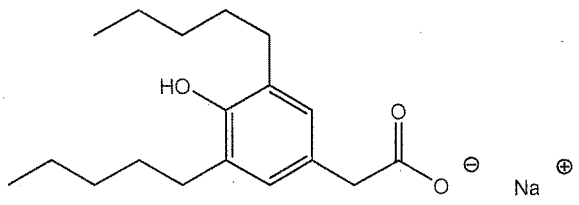
and instructions for administering a therapeutically effective amount of the compound to the subject suffering from said fibrotic disease.

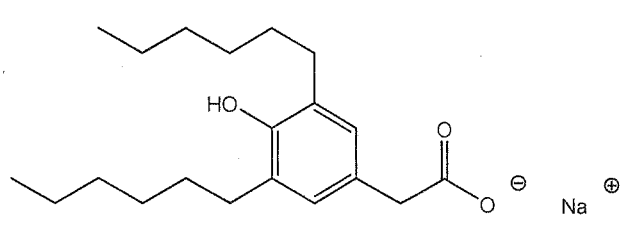
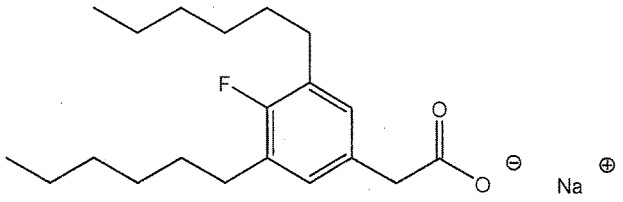
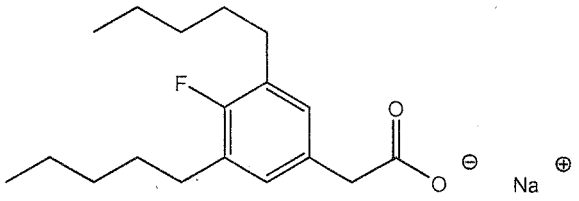
23. The kit of claim 22, wherein the fibrotic disease is pulmonary fibrosis, liver fibrosis, skin fibrosis, renal fibrosis, pancreas fibrosis, systemic sclerosis, cardiac fibrosis or macular degeneration.

24. The kit of claim 22 or 23, further comprises instructions for administering between about 1 to about 50 mg/kg of the compound daily and orally to the subject who is a human.

25. The kit of claim 23, further comprises instructions for administering between about 0.01 to about 10 % (w/w) of the compound daily and topically to the subject who is a human, and wherein the fibrotic disease is skin fibrosis.

26. The kit of any one of claims 22 to 25, wherein the compound is one of the following compounds:

| | |
|---|---|
| Compound 1 |  |
| Compound 2 |  |
| Compound 3 |  |
| Compound 4 |  |
| Compound 5 |  |

| | |
|---|---|
| Compound 6 |  |
| Compound 7 |  |
| Compound 8 |  |