SUMMARY OF THE INVENTION

One aspect of the invention pertains to certain substituted *N*-(4-hydroxy-4-methyl-cyclohexyl)-4-phenyl-benzenesulfonamide and *N*-(4-hydroxy-4-methyl-cyclohexyl)-4-(2-pyridyl)benzenesulfonamide compounds (collectively referred to herein as HMC compounds), as described herein.

Another aspect of the invention pertains to a composition (*e.g.*, a pharmaceutical composition) comprising an HMC compound, as described herein, and a pharmaceutically acceptable carrier or diluent.

Another aspect of the invention pertains to a method of preparing a composition (*e.g.*, a pharmaceutical composition) comprising the step of mixing an HMC compound, as described herein, and a pharmaceutically acceptable carrier or diluent.

Another aspect of the present invention pertains to an HMC compound, as described herein, for use in a method of treatment of the human or animal body by therapy, for example, for use a method of treatment of a disorder (*e.g.*, a disease) as described herein.

Another aspect of the present invention pertains to use of an HMC compound, as described herein, in the manufacture of a medicament for treatment, for example, treatment of a disorder (*e.g.*, a disease) as described herein.

One example of the present disclosure pertains to a method of treatment, for example, of a disorder (*e.g.*, a disease) as described herein, comprising administering to a patient in need of treatment a therapeutically effective amount of an HMC compound, as described herein, preferably in the form of a pharmaceutical composition.

Another example of the present disclosure pertains to a kit comprising (a) an HMC compound, as described herein, preferably provided as a pharmaceutical composition and in a suitable container and/or with suitable packaging; and (b) instructions for use, for example, written instructions on how to administer the compound.

Another example of the present disclosure pertains to an HMC compound *obtainable* by a method of synthesis as described herein, or a method comprising a method of synthesis as described herein.

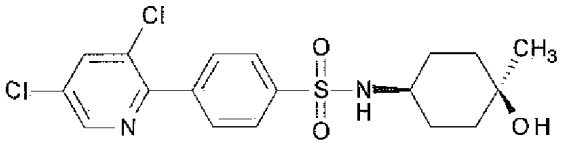
Another example of the present disclosure pertains to an HMC compound *obtained* by a method of synthesis as described herein, or a method comprising a method of synthesis as described herein.

Another example of the present disclosure pertains to novel intermediates, as described herein, which are suitable for use in the methods of synthesis described herein.

Another example of the present disclosure pertains to the use of such novel intermediates, as described herein, in the methods of synthesis described herein.

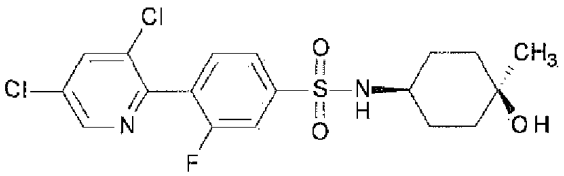
As will be appreciated by one of skill in the art, features and preferred embodiments of one aspect of the invention will also pertain to other aspects of the invention.

32. A compound according to claim 23, which is a compound of the following formula, or a pharmaceutically acceptable salt, hydrate, or solvate thereof:



(HMC-N-03-B).

33. A compound according to claim 23, which is a compound of the following formula, or a pharmaceutically acceptable salt, hydrate, or solvate thereof:



(HMC-N-04-B).

34. A composition comprising a compound according to any one of claims 1 to 33, and a pharmaceutically acceptable carrier or diluent.

35. A method of preparing a composition comprising the step of mixing a compound according to any one of claims 1 to 33 and a pharmaceutically acceptable carrier or diluent.

36. A compound according to any one of claims 1 to 33 for use in a method of treatment of the human or animal body by therapy.

37. A compound according to any one of claims 1 to 33 for use in treating:

rheumatoid arthritis; psoriasis; psoriatic arthritis; chronic obstructive pulmonary disease; asthma; atherosclerosis; inflammatory bowel disease; ankylosing spondylitis;

multiple sclerosis; systemic lupus erythematosus; Sjogren's syndrome;

a disorder associated with bone loss, including bone loss associated with excessive osteoclast activity in rheumatoid arthritis, osteoporosis, cancer-associated bone disease, and Paget's disease;

cancer, including a haematological malignancy, including multiple myeloma, leukemia, and lymphoma, and a solid tumour cancer, including bladder cancer, breast cancer, colon cancer, renal cell carcinoma, kidney cancer, lung cancer, pancreatic cancer, gastric cancer, prostate cancer, brain cancer, skin cancer, thyroid cancer, basal cell ameloblastoma, and melanoma;

a disorder associated with fibrosis, including systemic sclerosis and scleroderma; or

a rare vasculitide, including Behçet's disease.

38. A compound according to any one of claims 1 to 33 for use in treating:

rheumatoid arthritis; psoriasis; psoriatic arthritis; chronic obstructive pulmonary disease; asthma; atherosclerosis; inflammatory bowel disease; or ankylosing spondylitis.

39. A compound according to any one of claims 1 to 33 for use in treating:

multiple sclerosis; systemic lupus erythematosus; or Sjogren's syndrome..

40. A compound according to any one of claims 1 to 33 for use in treating:

a disorder associated with bone loss, including bone loss associated with excessive osteoclast activity in rheumatoid arthritis, osteoporosis, cancer-associated bone disease, and Paget's disease.

41. A compound according to any one of claims 1 to 33 for use in treating:

cancer, including a haematological malignancy, including multiple myeloma, leukemia, and lymphoma, and a solid tumour cancer, including bladder cancer, breast cancer, colon cancer, renal cell carcinoma, kidney cancer, lung cancer, pancreatic cancer, gastric cancer, prostate cancer, brain cancer, skin cancer, thyroid cancer, basal cell ameloblastoma, and melanoma.

42. A compound according to any one of claims 1 to 33 for use in treating:

a disorder associated with fibrosis, including systemic sclerosis and scleroderma.

43. A compound according to any one of claims 1 to 33 for use in treating:

a rare vasculitide, including Behçet's disease.

44. Use of a compound according to any one of claims 1 to 33 in the manufacture of a medicament for the treatment of:

rheumatoid arthritis; psoriasis; psoriatic arthritis; chronic obstructive pulmonary disease; asthma; atherosclerosis; inflammatory bowel disease; ankylosing spondylitis;

multiple sclerosis; systemic lupus erythematosus; Sjogren's syndrome;

a disorder associated with bone loss, including bone loss associated with excessive osteoclast activity in rheumatoid arthritis, osteoporosis, cancer-associated bone disease, and Paget's disease;

cancer, including a haematological malignancy, including multiple myeloma, leukemia, and lymphoma, and a solid tumour cancer, including bladder cancer, breast cancer, colon cancer, renal cell carcinoma, kidney cancer, lung cancer, pancreatic cancer, gastric cancer, prostate cancer, brain cancer, skin cancer, thyroid cancer, basal cell ameloblastoma, and melanoma;

a disorder associated with fibrosis, including systemic sclerosis and scleroderma; or

a rare vasculitide, including Behçet's disease.

45. Use of a compound according to any one of claims 1 to 33 in the manufacture of a medicament for the treatment of:

rheumatoid arthritis; psoriasis; psoriatic arthritis; chronic obstructive pulmonary disease; asthma; atherosclerosis; inflammatory bowel disease; or ankylosing spondylitis.

46. Use of a compound according to any one of claims 1 to 33 in the manufacture of a medicament for the treatment of:

multiple sclerosis; systemic lupus erythematosus; or Sjogren's syndrome.

47. Use of a compound according to any one of claims 1 to 33 in the manufacture of a medicament for the treatment of:

a disorder associated with bone loss, including bone loss associated with excessive osteoclast activity in rheumatoid arthritis, osteoporosis, cancer-associated bone disease, and Paget's disease.

48. Use of a compound according to any one of claims 1 to 33 in the manufacture of a medicament for the treatment of:

cancer, including a haematological malignancy, including multiple myeloma, leukemia, lymphoma, and a solid tumour cancer, including bladder cancer, breast cancer, colon cancer, renal cell carcinoma, kidney cancer, lung cancer, pancreatic cancer, gastric cancer, prostate cancer, brain cancer, skin cancer, thyroid cancer, basal cell ameloblastoma, and melanoma.

49. Use of a compound according to any one of claims 1 to 33 in the manufacture of a medicament for the treatment of:

a disorder associated with fibrosis, including systemic sclerosis and scleroderma.

50. Use of a compound according to any one of claims 1 to 33 in the manufacture of a medicament for the treatment of:

a rare vasculitide, including Behçet's disease.