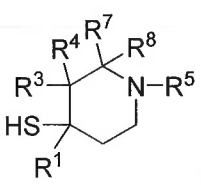
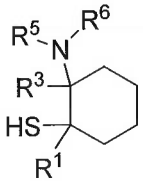
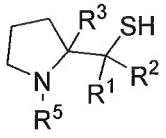
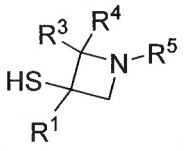
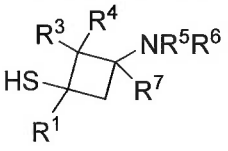
R^2 and R^4, taken together with the atoms to which they are attached, form a 3-, 4-, 5-, 6-, 7-, or 8-membered carbocyclic ring.

[0006a] In an aspect, there is provided use of a composition in the manufacture of a medicament for treating a patient suffering from a disease for which treatment with cysteamine is indicated, wherein the composition comprises a compound or a disulphide thereof selected from the group consisting of:


, 
, 
, 
, and 
,

wherein:

R^1 and R^2 are independently selected from the group consisting of H and $C_{1\text{-}5}$alkyl; or

R^1 and R^2, taken together with the carbon atom to which they are attached, form a 3-, 4-, 5-, 6-, 7-, or 8-membered carbocyclic ring;

R^3 and R^4 are independently selected from the group consisting of H and $C_{1\text{-}5}$alkyl; or

R^3 and R^4, taken together with the carbon atom to which they are attached, form a 3-, 4-, 5-, 6-, 7-, or 8-membered carbocyclic ring;

R^5 and R^6 are independently selected from the group consisting of H and $C_{1\text{-}5}$alkyl; or

R^5 and R^6, taken together with the nitrogen atom to which they are attached, form a 3-, 4-, 5-, 6-, 7-, or 8-membered heterocyclic ring;

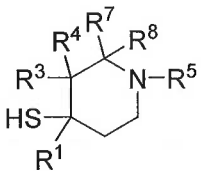
R^7 and R^8 are independently selected from the group consisting of H and $C_{1\text{-}5}$alkyl; or

R^7 and R^8, taken together with the carbon atom to which they are attached, form a 3-, 4-, 5-, 6-, 7-, or 8-membered carbocyclic ring; or

R^4 and R^6, taken together with the atoms to which they are attached, form a 4-, 5-, 6-, 7-, 8-, 9-, or 10-membered heterocyclic ring, and wherein the disease is selected from the group consisting of cystinosis, fatty liver disease, fibrosis, a thrombotic disease, a neurological disease or disorder, inflammation and cancer, an MECP-2 related disorder selected from the group consisting of Rett syndrome, autism, pervasive development disorder, non-syndromic mental retardation, idiopathic neonatal encephalopathy and idiopathic cerebral palsy, and an inherited mitochondrial disease selected from the group consisting of Friedreich's ataxia, Leber's hereditary optic neuropathy (LHON), myoclonic epilepsy and ragged-red fibers, mitochondrial encephalomyopathy, lactic acidosis, and

stroke-like syndrome (MELAS), Kearn-Sayre syndrome and subacute necrotizing encephalopathy (Leigh's Syndrome).

[0006b] In another aspect, there is provided a compound having the following structure or a disulfide thereof:



wherein R^1 is $C_{1\text{-}5}$alkyl; and

R^3, R^4, R^5, R^7, and R^8 are independently selected from the group consisting of H and $C_{1\text{-}5}$alkyl.

[0007] In some cases, when G is —NH_2, at least one of R^1, R^2, R^3, and R^4 is other than H.

[0008] In some cases, R^5 and R^6 are independently selected from the group consisting of H, methyl, and ethyl. In some cases, R^5 and R^6, taken together with the nitrogen atom to which they are attached, form a 5-membered heterocyclic ring.

[0009] In some cases, wherein R^4 is methyl and/or R^3 is methyl. In some cases, R^3 and R^4, taken together with the carbon atom to which they are attached, form a 3-membered carbocyclic ring.

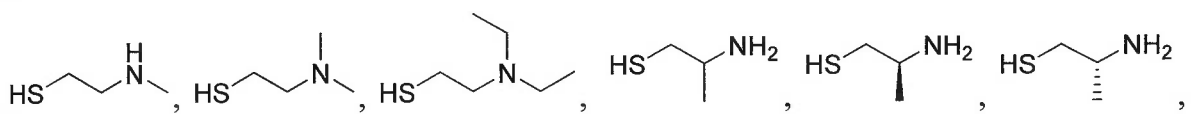
[0010] In some cases, R^2 is methyl and/or R^1 is methyl. In some cases, R^1 and R^2, taken together with the carbon atom to which they are attached, form a 3-membered carbocyclic ring.

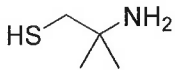
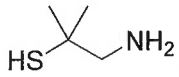
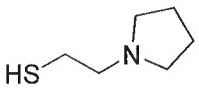
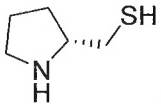
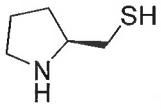
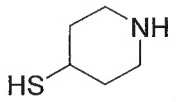
[0011] In some cases, G is —$CR^7R^8NR^5R^6$, and R^2 and R^6, taken together with the atoms to which they are attached, form a 6-membered heterocyclic ring. In some cases, R^5 is methyl.

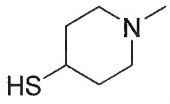
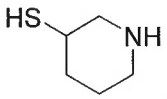
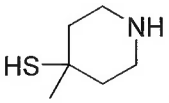
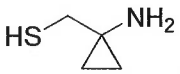
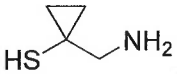
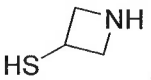
[0012] In some cases, G is —NR^5R^6, and R^2 and R^6, taken together with the atoms to which they are attached, form a 4- or 6-membered heterocyclic ring. In some cases, R^5 is H.

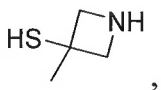
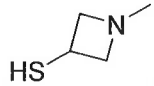
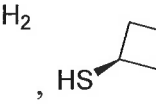
[0013] In some cases, R^7 and R^8 are both H.

[0014] A compound of formula I includes, but is not limited to, the following compounds:



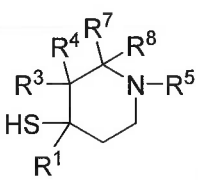
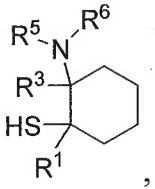
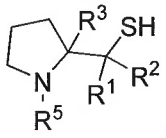
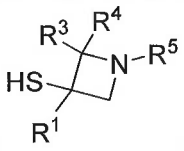
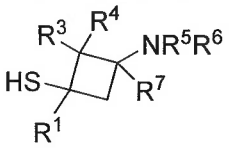
 ,  ,  ,  ,  ,  ,

 ,  ,  ,  ,  ,  ,

 ,  ,  ,  , and disulfides thereof.

WHAT IS CLAIMED:

1. Use of a composition in the manufacture of a medicament for treating a patient suffering from a disease for which treatment with cysteamine is indicated, wherein the composition comprises a compound or a disulphide thereof selected from the group consisting of:


, 
, 
, 
, and 
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wherein:

R^1 and R^2 are independently selected from the group consisting of H and $C_{1\text{-}5}$alkyl; or

R^1 and R^2, taken together with the carbon atom to which they are attached, form a 3-, 4-, 5-, 6-, 7-, or 8-membered carbocyclic ring;

R^3 and R^4 are independently selected from the group consisting of H and $C_{1\text{-}5}$alkyl; or

R^3 and R^4, taken together with the carbon atom to which they are attached, form a 3-, 4-, 5-, 6-, 7-, or 8-membered carbocyclic ring;

R^5 and R^6 are independently selected from the group consisting of H and $C_{1\text{-}5}$alkyl; or

R^5 and R^6, taken together with the nitrogen atom to which they are attached, form a 3-, 4-, 5-, 6-, 7-, or 8-membered heterocyclic ring;

R^7 and R^8 are independently selected from the group consisting of H and $C_{1\text{-}5}$alkyl; or

R^7 and R^8, taken together with the carbon atom to which they are attached, form a 3-, 4-, 5-, 6-, 7-, or 8-membered carbocyclic ring; or

R^4 and R^6, taken together with the atoms to which they are attached, form a 4-, 5-, 6-, 7-, 8-, 9-, or 10-membered heterocyclic ring, and wherein the disease is selected from the group consisting of cystinosis, fatty liver disease, fibrosis, a thrombotic disease, a neurological disease or disorder, inflammation and cancer, an MECP-2 related disorder selected from the group consisting of Rett syndrome, autism, pervasive development disorder, non-syndromic mental retardation, idiopathic neonatal encephalopathy and idiopathic cerebral palsy, and an inherited mitochondrial disease selected from the group consisting of Friedreich's ataxia, Leber's hereditary optic neuropathy (LHON), myoclonic epilepsy and ragged-red fibers, mitochondrial encephalomyopathy, lactic acidosis, and

stroke-like syndrome (MELAS), Kearn-Sayre syndrome and subacute necrotizing encephalopathy (Leigh's Syndrome).

2. The use of claim 1, wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, and R^8 are independently selected from the group consisting of H and $C_{1\text{-}5}$alkyl.

3. The use of claim 1, wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, and R^8 are independently selected from the group consisting of H and methyl.

4. The use of any one of claims 1-3, wherein the compound of formula I, formula II, formula III, or disulfide thereof is resistant to metabolism by cysteamine dioxygenase (ADO).

5. The use of claim 4, wherein less than 20% of the compound of formula I, formula II, formula III, or disulfide thereof is metabolized by ADO when assayed by consumption of oxygen using an oxygen sensitive fluorescent probe.

6. The use of any one of claims 1-5 wherein the disease is selected from the group consisting of cystinosis, fatty liver disease, fibrosis, a thrombotic disease, an MECP-2 related disorder selected from the group consisting of Rett syndrome, autism, pervasive development disorder, non-syndromic mental retardation, idiopathic neonatal encephalopathy and idiopathic cerebral palsy, an inherited mitochondrial disease selected from the group consisting of Friedreich's ataxia, Leber's hereditary optic neuropathy (LHON), myoclonic epilepsy and ragged-red fibers, mitochondrial encephalomyopathy, lactic acidosis, and stroke-like syndrome (MELAS), Kearn-Sayre syndrome and subacute necrotizing encephalopathy (Leigh's Syndrome), a neurological disease or disorder, inflammation and cancer.

7. The use of claim 6 wherein the fatty liver disease is selected from the group consisting of non-alcoholic fatty liver disease (NAFLD), non-alcoholic steatohepatitis (NASH), fatty liver disease resulting from hepatitis, fatty liver disease resulting from obesity, fatty liver disease resulting from diabetes, fatty liver disease resulting from insulin resistance, fatty liver disease resulting from hypertriglyceridemia, Abetalipoproteinemia, glycogen storage diseases, Weber-Christian disease, Wolmans disease, acute fatty liver of pregnancy, and lipodystrophy.

8. The use of claim 6 wherein the fibrosis is selected from the group consisting of atherosclerosis, asthma, cardiac fibrosis, organ transplant fibrosis, colloid and hypertrophic scar, muscle fibrosis, pancreatic fibrosis, bone-marrow fibrosis, interstitial liver fibrosis,

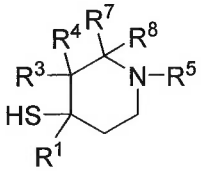
cirrhosis of liver and gallbladder, scleroderma, pulmonary fibrosis, diffuse parenchymal lung disease, idiopathic interstitial fibrosis, interstitial pneumonitis, desquamative interstitial pneumonia, respiratory bronchiolitis, interstitial lung disease, acute interstitial pneumonitis, nonspecific interstitial pneumonia, cryptogenic organizing pneumonia, lymphocytic interstitial pneumonia, renal fibrosis, and chronic kidney disease, cystic fibrosis and Alport's disease.

9. The use of claim 6 wherein the thrombotic disease is selected from the group consisting of sickle cell disease, deep vein thrombosis, pulmonary embolism, cardiac embolism, hypercoagulable state, thrombophilia, Factor V Leiden, Antithrombin III deficiency, Protein C deficiency, Protein S deficiency, Prothrombin gene mutation (G20210A), Hyperhomcysteinemia, antiphospholipid antibody syndrome (APS), anticardiolipin antibody (ACLA) thrombosis syndrome, or lupus anticoagulant (LA) syndrome.

10. The use of claim 6 wherein the neurological disease or disorder is selected from the group consisting of Huntington's Disease, Parkinson's Disease, amyotrophic lateral sclerosis, multiple sclerosis, Alzheimer's disease spinal muscle atrophy, concussion, stroke, and traumatic brain injury (CTE).

11. The use of claim 6 wherein the cancer is selected from the group consisting of breast cancer, melanoma, prostate cancer, pancreatic cancer, head and neck cancer, lung cancer, non small-cell lung carcinoma, renal cancer, colorectal cancer, colon cancer, ovarian cancer, liver cancer and gastric cancer.

12. A compound having the following structure or a disulfide thereof:



wherein R^1 is $C_{1\text{-}5}$alkyl; and

R^3, R^4, R^5, R^7, and R^8 are independently selected from the group consisting of H and $C_{1\text{-}5}$alkyl.