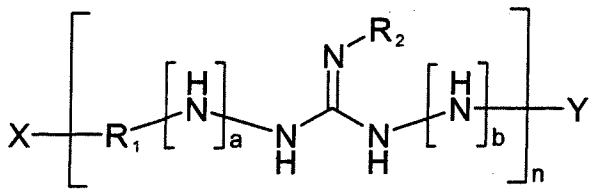
CLAIMS

The invention claimed is:

1. A polyguanidine derivative comprising a polycondensation product of aminoguanidine and/or 1,3-diaminoguanidine with at least one diamine and having the following formula (I) or a salt thereof:



(I)

wherein

X is selected from —NH2, aminoguanidino, and 1,3-diaminoguanidino;

Y is selected from —H and —R_1—NH_2;

or X and Y together represent a chemical bond to give a cyclic structure;

R_1 is selected from divalent organic radicals having 2 to 20 carbon atoms, in which optionally at least one carbon atom is replaced by O or N;

a and b are each 0 or 1,

wherein a+b≠2 if no 1,3-diaminoguanidine units are contained;

R_2 is selected from —H and —NH2,

wherein R_2 is —NH_2 if a+b=0,

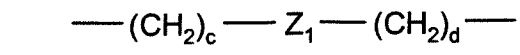
R_2 is —H or —NH_2 if a+b=1, and

R_2 is —H if a+b=2; and

n>2.

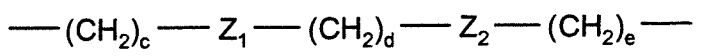
2. The polyguanidine derivative according to claim 1, wherein R_1 is selected from alkylene radicals, in which optionally at least one carbon atom is replaced by O or N.

3. The polyguanidine derivative according to claim 2, wherein R_1 is selected from radicals of the following general formulas (II) to (V):



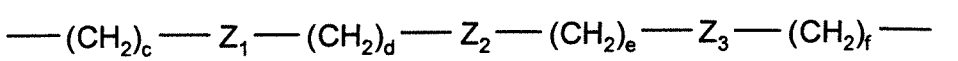
(II),

(II)



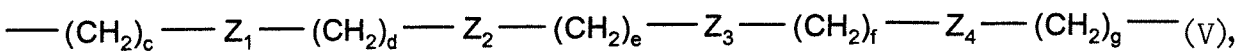
(III),

(III)



(IV), and

(IV)



wherein Z_1 to Z_4 are each independently a heteroatom selected from O and N, and indexes c to g are each independently integers in a range of 1 to 12, such that a total number of atoms of radical R_1 does not exceed 20.

4. The polyguanidine derivative according to claim 3, wherein all heteroatoms Z within one radical R_1 are either O or N.

5. The polyguanidine derivative according to claim 4, wherein R_1 represents a divalent radical of a polyether diamine.

6. The polyguanidine derivative according to claims 1, wherein n=2 to 6.

7. The polyguanidine derivative according to claim 1, wherein the salt is an acid addition salt in a form of a hydrogen chloride, hydrogen bromide, hydrogen iodide, sulfate, carbonate, borate, cyanate, thiocyanate, phosphate, mesylate, nitrate, acetate, benzoate, lactate, tartrate, citrate, maleate, fumarate, a partial ester of one of these acids, in case they are difunctional or higher, or as a mixture of at least two of these salts and/or partial esters.

8. A method for producing a polyguanidine derivative according to claim 1, the method comprising polycondensing a guanidine derivative selected from aminoguanidine, 1,3-diaminoguanidine and an acid addition salt thereof with at least one diamine of the formula $H_2N—R—NH_2$ by heating.

9. The method according to claim 8, wherein the at least one diamine is used at an excess of 3 to 5 molar % in relation to the guanidine derivative.

10. The method according to claim 8, wherein the acid addition salt of amino-guanidine or 1,3-diaminoguanidine is heated together with the at least one diamine, initially to a first, lower temperature and then to a second, higher temperature.

11. The method according to claim 10, wherein the acid addition salt of aminoguanidine or 1,3-diaminoguanidine is heated together with the at least one diamine, initially to 110-130° C. and then to 160-180° C.

12. The method according to claim 10, wherein a reaction mixture the guanidine derivative and diamine is kept at the first temperature for 1 to 3 hours and at the second temperature for 1 to 8 hours.

13. The method according to claim 8, wherein the polyguanidine derivative is purified by dissolution in approximately a 3-to 10-fold amount of water.

14. A method of using the polyguanidine derivative according to claim 1 for in human and veterinary medical fields for antagonizing bacterial, fungal and viral infections and their aftereffects.

15. A method of using the polyguanidine derivative according to claim 1 as a pesticide and disinfectant in the agricultural and environmental fields for reducing and eliminating germs.

16. A method of using the polyguanidine derivative according to claim 1 as an antiparasitic.

17. A method of using the polyguanidine derivative according to claim 1 as a supplement for stabilizing or sterilizing products.

18. A method of using the polyguanidine derivative according to claim 1 as a nebulization substance, wherein the polyguanidine derivative is present in a dissolved form for cold/wet nebulization, micronization and vapor sterilization.

19. A composition comprising the polyguanidine derivative according to claim 1, wherein an effective amount of the polyguanidine derivative is present as a solution in a 3- to 10-fold amount of water.