

TABLE VI-continued

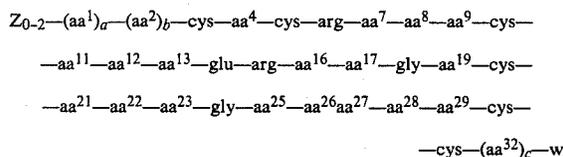
EXP.	Log ₁₀ INPUT	Effects of Purified HNP1, 2 and 3 on Test Organisms				
		Decrease (log ₁₀ units) in Concentration of Test Organisms Relative to Input				
		CON-TROL	HNP 1-3	HNP-1	HNP-2	HNP-3
1	6.15	-0.79	3.52	3.22	3.43	3.61
2	6.23	-0.79	3.55	2.04	3.60	3.47
<i>E. coli</i> ML-35						
1	6.28	-0.65	2.67	2.40	2.75	0.64
2	6.20	-0.84	1.46	1.91	1.30	0.10
<i>P. aeruginosa</i> PAO 579						
1	6.24	0.31	1.16	1.20	1.39	1.07
2	6.45	0.22	0.47	0.64	0.91	0.35
<i>S. aureus</i> 502A						
1	5.97	-0.72	1.65	2.14	1.63	0.23
2	6.22	-0.37	2.13	2.27	1.95	0.55
HSV-1 (McIntyre)						
1	6.79	0.18	2.62	2.27	2.72	2.36
2	6.62	NT	2.36	2.17	1.90	2.28
3	6.76	0.02	1.75	1.77	1.74	1.34

Data are shown in log₁₀ units. The Input column shows the absolute concentration of bacteria or fungi in CFU/ml or of HSV-1 in PFU/ml at the outset of the incubation. The remaining data show the decrease in CFU/ml, relative to the input, after a 2 hour incubation of fungi or bacteria with 50 µg/ml of a mixture of the three defensins (HNP 1-3) or with 50 µg/ml of the individual peptides. *C. neoformans* was incubated in nutrient-free 10 mM phosphate buffer, pH 7.4, whereas bacteria were incubated in that buffer supplemented with 1% v/v trypticase soy broth. A minus sign indicates that the CFU/ml at 2 h was higher than the input (i.e., that growth had occurred). Experiments with HSC-1 were conducted by exposing the indicated concentration of viruses to 25 µg/ml of HNP1-3 or the individual peptide species for 60 min at 37 C. in Dulbecco's phosphate buffered saline. The HNP1-3 used in this study was reconstituted by mixing the individual purified peptides in a ratio of 1:1:0.5 (HNP-1:HNP-2:HNP-3).

What is claimed is:

1. A method for inhibiting microbial growth in an environment susceptible to said microbial growth, said method comprising:

administering to said environment a microbial growth inhibiting amount of a cationic oligopeptide of not more than about 35 amino acids having a sequence of the formula:



Z is bonded to the terminal amino and may be an acyl group of from one to six carbon atoms having from zero to one amino substituent, alkyl of from one to three carbon atoms or a protective group;

a, b and c are 0 or 1;

the superscripts to the aa which defines amino acid, intends the amino acid number in the polypeptide, except where aa⁹ intends two amino acids and then all subsequent numbers are increased by

one, as well as the numbers in the subsequent definitions;

amino acids 1, 7, 8, 11, 13, 21, 23, 25, 26 and 28 are aliphatic amino acids;

amino acids 2, 4, 9, 12, 16, 17, 19, 22, 27, 29 and 32 are either aliphatic amino acids or aromatic amino acids; and

w is the terminal hydroxyl, amino or a peptide of from one to six amino acids having a basic amino acid at the N-terminus.

2. A method according to claim 1, wherein said environment is a formulation for use in vivo.

3. A method according to claim 1, wherein said environment is a protein-containing formulation.

4. A method according to claim 1, wherein

aa¹ is val or gly;

aa² is val, ile, arg ser, phe, ala or asp;

aa⁴ is ala, val, thr or tyr;

aa⁷ is arg, lys, gly or ile;

aa⁸ is ala, arg, gln, phe or pro;

aa⁹ is 2leu, phe, ser or ala;

aa¹¹ is leu, pro, ser, gly or ile;

aa¹² is pro, asn, lys, phe, ser or ala;

aa¹³ is arg, leu, ser or gly;

aa¹⁶ is arg, phe or ala;

aa¹⁷ is ala, ser, ile or tyr;

aa¹⁹ is phe, tyr, asp, ser or thr;

aa²¹ is arg, lys, thr or ile;

aa²² is ile, val or tyr;

aa²³ is arg, asn or gln;

aa²⁵ is arg, ala or val;

aa²⁶ is ile, leu or arg;

aa²⁷ is his, val, phe or trp;

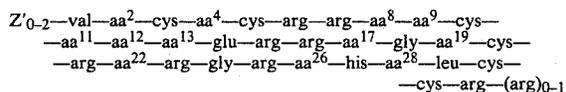
aa²⁸ is pro, tyr, ala or thr;

aa²⁹ is leu, arg or phe;

aa³² is arg, ser, pro or trp; and

w is 0-2 arg.

5. A method according to claim 1, wherein said cationic oligopeptide is of the formula:



wherein:

Z' is methyl, acetyl or an amino acid;

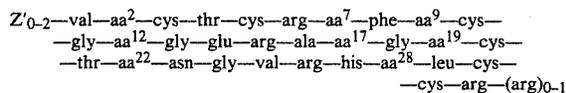
amino acids 2, 4, 8, 9, 11, 17, and 22 are neutral amino acids;

amino acids 12 and 28 are heterocyclic amino acids or neutral amino acids;

amino acid 19 is an aromatic amino acid or hydroxy substituted aliphatic amino acid;

amino acids 13 and 26 are aliphatic amino acids or basic amino acids.

6. A method according to claim 1, wherein said cationic oligopeptide is of the formula:



wherein:

aa² and aa¹² are phe or ser;

aa⁷ is arg or gly;

aa⁹ is a hydroxy substituted or unsubstituted aliphatic amino acid;