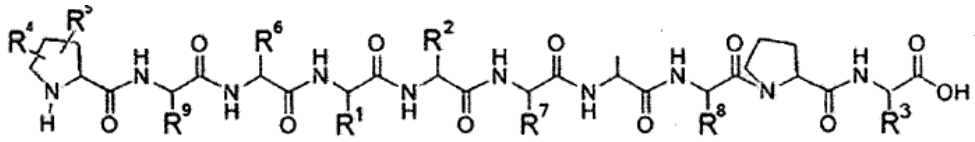
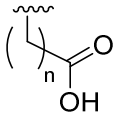
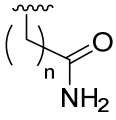
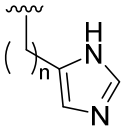
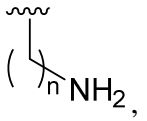
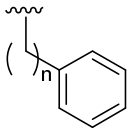
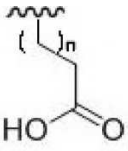
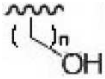
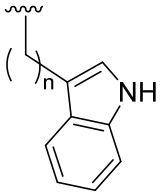
CLAIMS

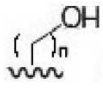
1. A compound represented by Formula 1:

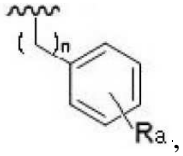
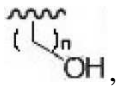
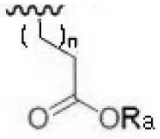
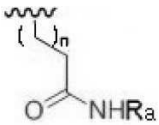
[Formula 1]


;

wherein:

R^1 is selected from substituted or unsubstituted C_{1-6} alkyl, , , , , , , , and , wherein n is an integer from 1 to 10;

R^2 is selected from hydrogen, substituted or unsubstituted C_{1-6} alkyl, and , wherein n is an integer from 1 to 10;

R^3 is selected from substituted or unsubstituted C_{1-6} alkyl, , , , and , wherein R_a is hydrogen or C_{1-6} alkyl, and n is an integer from 1 to 10;

R^4 is selected from substituted or unsubstituted C_{1-6} alkyl, substituted or unsubstituted C_{5-12} aryl, substituted or unsubstituted C_{7-12} arylalkyl, substituted or unsubstituted heterocycle, $-X_2$, $-O^-$, $-CH_2OR_b$, and $-OR_b$;

R^5 is selected from hydrogen, substituted or unsubstituted C_{1-6} alkyl, substituted or unsubstituted

C_{5-12} aryl, substituted or unsubstituted C_{7-12} arylalkyl, substituted or unsubstituted heterocycle, $-X_2$, $-O^-$, =O, $-CH_2OR_b$, and $-OR_b$,

X_2 is F, Cl, Br, or I,

R_b is H, substituted or unsubstituted C_{1-6} alkyl, substituted or unsubstituted C_{5-12} aryl, substituted or unsubstituted C_{7-12} arylalkyl, or substituted or unsubstituted heterocycle,

R^6 is hydrogen or substituted or unsubstituted C_{1-6} alkyl, the substituent being $-C(=O)NH_2$,

R^7 is hydrogen or C_{1-6} alkyl, and

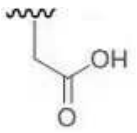
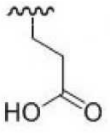
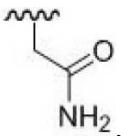
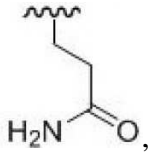
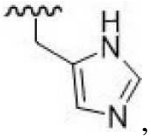
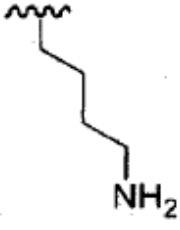
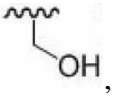
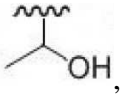
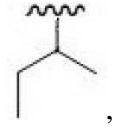
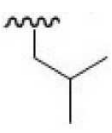
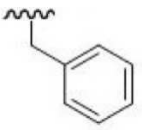
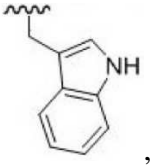
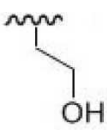
R^8 and R^9 are hydrogen or unsubstituted C_{1-6} alkyl;

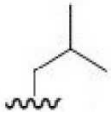
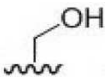
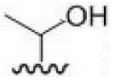
further wherein, unless otherwise specified, when a group is substituted, it is substituted with a substituent selected from $-X_1$, $-R_j$, $-O^-$, =O, $-OR_j$, $-SR_j$, $-S^-$, $-N(R_j)_2$, $-N^+(R_j)_3$, $=NR_j$, $-C(X_1)_3$, -CN, -OCN, -SCN, -N=C=O, -NCS, -NO, $-NO_2$, =N-OH, $=N_2$, $-N_3$, $-NHC(=O)R_j$, $-C(=O)R_j$, $-C(=O)NR_jR_j$, $-S(=O)_2O^-$, $-S(=O)_2OH$, $-S(=O)_2R_j$, $-OS(=O)_2OR_j$, $-S(=O)_2NR_j$, $-S(=O)R_j$, $-OP(=O)(OR_j)_2$, $-C(=O)R_j$, alkylene-$C(=O)R_j$, $-C(=S)R_j$, $-C(=O)OR_j$, alkylene-$C(=O)OR_j$, $-C(=O)O^-$, alkylene-C(=O)O-, $-C(=S)OR_j$, $-C(=O)SR_j$, $-C(=S)SR_j$, $-C(=O)NR_jR_j$, alkylene-$C(=O)NR_jR_j$, $-C(=S)NR_jR_j$, and $-C(-NR_j)NR_jR_j$;

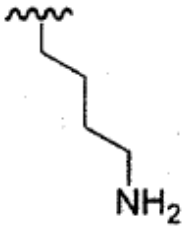
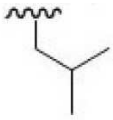
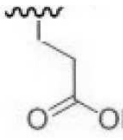
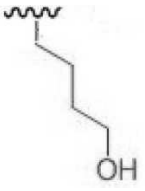
X_1 is F, Cl, Br, or I;

each occurrence of R_j is independently hydrogen, C_{1-6} alkyl, C_{5-12} aryl, C_{7-12} arylalkyl, or heterocycle; and

further wherein the compound is not HyP-Gly-Gln-Asp-Gly-Leu-Ala-Gly-Pro-Lys.

2. The compound of claim 1, wherein R^1 is selected from , , , , , , , , , , , , , , and .

3. The compound of claim 1, wherein R^2 is selected from , , , , ,, , and .

4. The compound of claim 1, wherein R^3 is selected from , , , , and .

5. The compound of claim 1, wherein R^4 is selected from the group consisting of -OH, and -CH_3.

6. A compound selected from the group consisting of HyP-Gly-Gln-Glu-Gly-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Asn-Gly-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Gln-Gly-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-His-Gly-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Lys-Gly-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Ser-Gly-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Thr-Gly-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Ala-Gly-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Val-Gly-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Phe-Gly-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Tyr-Gly-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Trp-Gly-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Ser(Homo)-Gly-Leu-Ala-Gly-Pro-Lys, $_{D}$-HyP(2R, 4S)-Gly-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Lys, $_{D}$-Hyp(2R,4S)-Gly-$_{D}$-Gln-$_{D}$-Leu-Gly-$_{D}$-Leu-$_{D}$-Ala-Gly-$_{D}$-Pro-$_{D}$-Lys, $_{D}$-Hyp(2R, 4R)-Gly-$_{D}$-Gln-$_{D}$-Leu-Gly-$_{D}$-Leu-$_{D}$-Ala-Gly-$_{D}$-Pro-$_{D}$-Lys,
HyP-Gly-Gln-Asp-Val-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Asp-Ile-Leu-Ala-Gly-Pro-Lys,

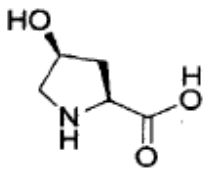
HyP-Gly-Gln-Asp-Leu-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Asp-Ala-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Asp-Ser-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Asp-Thr-Leu-Ala-Gly-Pro-Lys, HyP-Gly-Gln-Leu-Ala-Leu-Ala-Gly-Pro-Lys,
HyP-Gly-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Leu, HyP-Gly-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Glu, HyP-Gly-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Ala, $_{D}$-HyP(2R, 4S)-Gly-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Ala,
Hyp(2S,4S)-Gly-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Lys, (4-hydroxyMe)Pro-Gly-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Lys, (4-Fluoro)Pro-Gly-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Lys, (4-Dimethyl)Pro-Gly-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Lys, (4-Me)Pro-Gly-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Lys, (5-Me)Pro-Gly-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Lys,
Hyp-Gly-Ala-Leu-Gly-Leu-Ala-Gly-Pro-Lys, Hyp-Gly-Gln-Leu-Gly-Ala-Ala-Gly-Pro-Lys, Hyp-Gly-Gln-Leu-Gly-Leu-Ala-Ala-Pro-Lys, Hyp-Ala-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Lys, $_{D}$-Hyp(2R, 4S)-Ala-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Lys, and $_{D}$-Hyp(2R, 4S)-Ala-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Ala.

7. A peptide having an amino acid sequence represented by HyP-Gly-Gln-Xaa-Gly-Leu-Ala-Gly-Pro-Lys, wherein Xaa is selected from the group consisting of Glu, Asn, Gln, His, Lys, Ser, Thr, Ala, Val, Leu, Phe, Tyr, Trp, and homo-Ser.

8. A peptide having an amino acid sequence represented by HyP-Gly-Gln-Asp-Xaa-Leu-Ala-Gly-Pro-Lys, wherein Xaa is selected from the group consisting of Val, Ile, Leu, Ala, Ser, and Thr.

9. A peptide having an amino acid sequence represented by HyP-Gly-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Xaa, wherein Xaa is selected from the group consisting of Leu, Glu, and Ala.

10. A peptide having an amino acid sequence represented by PD-Gly-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Lys, wherein PD is any one selected from the group consisting of the following formulae:



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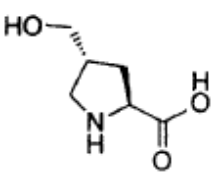
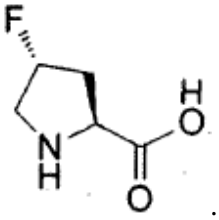


, and


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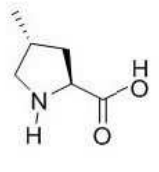
11. A peptide having an amino acid sequence represented by PD-Gly-Gln-Leu-Gly-Leu-Ala-Gly-Pro-Lys, wherein PD is any one selected from the group consisting of the following formulae: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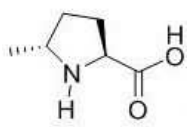
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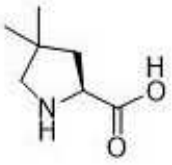
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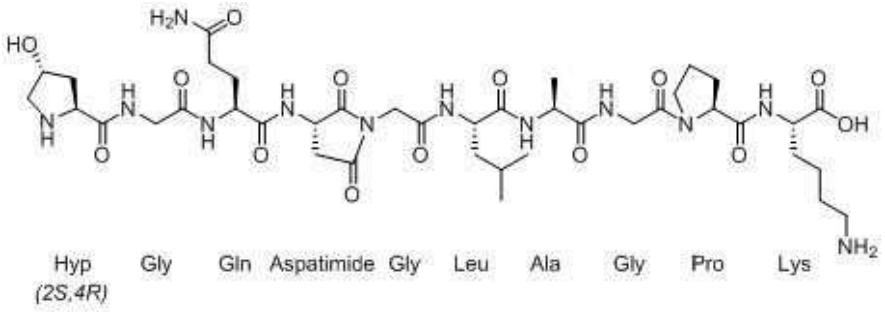
12. A peptide having any one amino acid sequence selected from the group consisting of Hyp-Gly-Gln-Leu-Gly-Leu-Ala-Gly-Ala-Lys, Hyp-Gly-Gln-Glu-Gly-Lys-Gly, HyP-Gly-Gln-Leu-Gly-Leu, $_{D}$-HyP(2R, 4S)-Gly-$_{D}$-Gln-$_{D}$-Leu-Gly-$_{D}$-Leu, HyP-Gly-Gln-Leu-Gly, HyP-Gly-Gln-$_{D}$-Leu-Gly, and $_{D}$-HyP(2R, 4S)-Gly-Gln-Leu-Gly.

13. A compound represented by Formula 8:

[Formula 8]



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14. A pharmaceutical composition for use in the treatment of an eye disease, which comprises the compound according to any one of claims 1 to 6 and 13, or the peptide according to any one of claims 7 to 12, as an active pharmaceutical ingredient.

15. Use of the compound according to any one of claims 1 to 6 and 13, or the peptide according to any one of claims 7 to 12 in the manufacture of a pharmaceutical composition for treating an eye disease.

16. The use of claim 15, wherein the eye disease is one selected from the group consisting of retinopathy, keratitis, dry-macular degeneration, wet-macular degeneration, dry eye syndrome, heratoconjunctivitis sicca and keratoconjunctival epithelium disorder.