CLAIMS

What is claimed is:

1. A composition comprising: (a) a carotenoid mixture comprising phytoene, phytofluene, and zeta carotene; and (b) a ceramide; wherein a weight per weight ratio (w/w) of said (a) and said (b) in said composition is between 25:1 (w/w) and 500:1 (w/w).

2. The composition of claim 1, wherein said carotenoid mixture comprises said phytoene in the amount of 55-65% (w/w) of the total carotenoids in said carotenoid mixture; said phytofluene in the amount of 10-20% (w/w) of the total carotenoids in said carotenoid mixture; and said zeta carotene in the amount of 15-25% (w/w) of the total carotenoids in said carotenoid mixture.

3. The composition of claim 2, wherein a w/w ratio of said phytoene and said phytofluene combined to said zeta carotene ranges from 15:1 (w/w) to 2:1 (w/w).

4. The composition of any one of claims 1 to 3, wherein said carotenoid mixture further comprises an additional carotenoid selected from the group consisting of: lycopene, beta carotene, gamma carotene, and any combination thereof.

5. The composition of claim 4, comprising said lycopene in the amount of less than 5% (w/w) of the total carotenoids in said carotenoids mixture, said beta carotene in the amount of less than 5% (w/w) of the total carotenoids in said carotenoids mixture, said gamma carotene in the amount of 0.2-1.5% (w/w) of the total carotenoids in said carotenoids mixture, or a combination thereof.

6. The composition of any one of claims 1 to 5, wherein said carotenoid mixture comprises a total carotenoid amount of 10-15% (w/w) of said carotenoid mixture.

7. The composition of any one of claims 1 to 6, wherein said carotenoid mixture further comprises a tocopherol in the amount of 10-30% (w/w) of the total carotenoids in said carotenoid mixture.

8. The composition of any one of claims 1 to 7, wherein said carotenoid mixture further comprises a phytosterol in the amount of 5-15% (w/w) of the total carotenoids in said carotenoid mixture.

9. The composition of any one of claims 1 to 8, wherein said ceramide comprises a plurality of types of ceramides.

10. The composition of any one of claims 1 to 9, any one of said ceramide and plurality of types thereof, is selected from the group consisting of: C2-ceramide, C1 ceramide, C3 ceramide, C6-ceramide, Ceramide 9.

11. The composition of any one of claims 1 to 10, wherein said composition has a synergistic effect in inhibition of: (i) collagen-loss; (ii) production, secretion, activity, or any combination thereof of any one of: nitric oxide (NO), myeloperoxidase (MPO), superoxide (SO), and any combination thereof; and (iii) both (i) and (ii).

12. The composition of claim 11, wherein said collagen is collagen-1.

13. A pharmaceutical composition comprising an effective amount of the composition of any of claims 1 to 12, and a pharmaceutically acceptable carrier.

14. The pharmaceutical composition of claim 13, for use in prevention or treatment of a collagen-loss related disease or disorder in a subject in need thereof.

15. The pharmaceutical composition for use according to claim 14, wherein said collagen is collagen-1.

16. The pharmaceutical composition for use according to claim 14 or 15, wherein said collagen-loss related disease or disorder comprises collagen loss in skin of said subject.

17. A kit comprising: (a) at least one carotenoid selected from the group consisting of: phytoene, phytofluene, zeta carotene, and any combination thereof; and (b) a ceramide.

18. The kit of claim 17, wherein said at least one carotenoid comprises phytoene, phytofluene, and zeta carotene.

19. The kit of claims 17 or 18, further comprising instructions for mixing said (a) and said (b) in a w/w of between 25:1 (w/w) and 500:1 (w/w).

20. The kit of any of claims 17 to 19, for use in the preparation of a composition suitable for prevention or treatment of collagen-loss related disease in a subject in need thereof.