

CLAIMS

What is claimed is:

1. A composition comprising: phytoene in the amount of 55-65% (w/w) of the total carotenoids in said composition, phytofluene in the amount of 10-20% (w/w) of the total carotenoids in said composition, zeta carotene in the amount of 15-25% (w/w) of the total carotenoids in said composition, and an acceptable carrier.
2. The composition of claim 1, wherein the weight ratio of said phytoene and said phytofluene combined to said zeta carotene ranges from 15:1 (w/w) to 2:1 (w/w).
3. The composition of claims 1 or 2, further comprising an additional carotenoid selected from the group consisting of: lycopene, beta carotene, gamma carotene, and any combination thereof.
4. The composition of claim 3, comprising said lycopene in the amount of less than 5% (w/w) of the total carotenoids in said composition, said beta carotene in the amount of less than 5% (w/w) of the total carotenoids in said composition, said gamma carotene in the amount of 0.2-1.5% (w/w) of the total carotenoids in said composition, or a combination thereof.
5. The composition of any one of claims 1 to 4, comprising total carotenoids amount of 10-15% (w/w) of said composition.
6. The composition of any one of claims 1 to 5, further comprising a tocopherol.
7. The composition of claim 6, comprising said tocopherol in the amount of 10-30% (w/w) total carotenoids in of said composition.
8. The composition of any one of claims 1 to 7, further comprising a phytosterol.
9. The composition of claim 8, comprising said phytosterol in the amount of 5-15% (w/w) total carotenoids in of said composition.

10. The composition of any one of claims 1 to 9, for use in reducing collagen loss, increasing collagen levels, or both.

11. A method for preventing or treating collagen loss in a subject in need thereof, comprising administering to said subject a therapeutically effective amount of the composition of any one of claims 1 to 10, thereby preventing or treating collagen-loss in the subject.

12. The method of claim 11, wherein said preventing or treating is reducing collagen loss by 50-90%.

13. A method for reducing the amount, the activity, or both, of any one of: a matrix metalloprotease (MMP), myeloperoxidase (MPO), superoxide (SO), elastase, nitric oxide (NO), and any combination thereof, in subject in need thereof, comprising administering said subject with a therapeutically effective amount of the composition of any one of claims 1 to 10.

14. The method of claim 13, wherein said MMP is selected from: MMP-9, MMP-8, MMP-1, or any combination thereof.

15. The method of any one of claims 11 to 14, wherein said subject is afflicted with a collagen-loss related disease.

16. The method of claim 15, wherein said collagen-loss related disease is selected from the group consisting of: an age-related disease, a skin disease, and an inflammatory disease.

17. The method of claim 16, wherein said skin disease comprises skin damage induced by any one of: radiation, oxidative stress, DNA damage, telomere shortening, inflammation, tobacco usage, and any combination thereof.

18. The method of claim 17, wherein said radiation comprises UV radiation, visible light radiation, infrared radiation, or any combination thereof.

19. The method of claim 18, wherein said UV radiation is UVA, UVB, UVC, or any combination thereof.

20. The method of any one of claims 11 to 19, wherein said subject has increased amount, increased activity, or both, of any one of: MMP, MPO, SO, elastase, NO, and any combination thereof, in the skin, systemically, or both, compared to control.

21. The method of any one of claims 11 to 20, wherein said administering comprises orally administering, topically administering, or both.