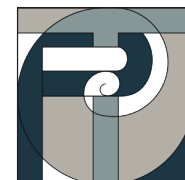


HIGH COLLAGEN Vegan Boost®

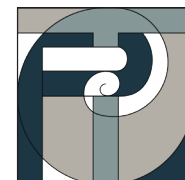
SUPPORTING STUDIES IN THE FORMULATION OF VECOLLAL®

1. Avila Rodríguez, M.I., L.G. Rodríguez Barroso, and M.L. Sánchez, *Collagen: A review on its sources and potential cosmetic applications*. Journal of Cosmetic Dermatology, 2018. **17**(1): p. 20-26.
2. Czajka, A., et al., *Daily oral supplementation with collagen peptides combined with vitamins and other bioactive compounds improves skin elasticity and has a beneficial effect on joint and general wellbeing*. Nutrition Research, 2018. **57**: p. 97-108.
3. Rossert, J., C. Terraz, and S. Dupont, *Regulation of type I collagen genes expression*. Nephrology Dialysis Transplantation, 2000. **15**(suppl_6): p. 66-68.
4. Davison-Kotler, E., W.S. Marshall, and E. García-Gareta, *Sources of collagen for biomaterials in skin wound healing*. Bioengineering, 2019. **6**(3): p. 56.
5. Canty, E.G. and K.E. Kadler, *Procollagen trafficking, processing and fibrillogenesis*. Journal of cell science, 2005. **118**(7): p. 1341-1353.
6. Tang, M., et al., *Effect of Hydroxylysine-O-glycosylation on the structure of type I collagen molecule: A computational study*. Glycobiology, 2020.
7. Silvipriya, K., et al., *Collagen: Animal sources and biomedical application*. Journal of Applied Pharmaceutical Science, 2015. **5**(3): p. 123-127.
8. Lestari, W., et al., *Plant-Based Substitutes for Gelatin*, in *Contemporary Management and Science Issues in the Halal Industry*. 2019, Springer. p. 319-322.
9. Oesser, S., et al., *Oral administration of ¹⁴C labeled gelatin hydrolysate leads to an accumulation of radioactivity in cartilage of mice (C57/BL)*. The Journal of nutrition, 1999. **129**(10): p. 1891-1895.
10. Watanabe-Kamiyama, M., et al., *Absorption and effectiveness of orally administered low molecular weight collagen hydrolysate in rats*. Journal of agricultural and food chemistry, 2010. **58**(2): p. 835-841.
11. Alcock, R., et al., *Plasma amino acid concentrations after the ingestion of dairy and collagen proteins, in healthy active males*. Frontiers in nutrition, 2019. **6**: p. 163.
12. de Paz-Lugo, P., J.A. Lupiáñez, and E. Meléndez-Hevia, *High glycine concentration increases collagen synthesis by articular chondrocytes in vitro: acute glycine deficiency could be an important cause of osteoarthritis*. Amino Acids, 2018. **50**(10): p. 1357- 1365.
13. Murakami, H., et al., *Importance of amino acid composition to improve skin collagen protein synthesis rates in UV-irradiated mice*. Amino Acids, 2012. **42**(6): p. 2481-2489.
14. Aoki, M., et al., *Increasing effect of an oral intake of L-hydroxyproline on the soluble collagen content of skin and collagen fragments in rat serum*. Bioscience, biotechnology, and biochemistry, 2012. **76**(6): p. 1242-1244.
15. Schwarz, R., R. Mandell, and M. Bissell, *Ascorbate induction of collagen synthesis as a means for elucidating a mechanism of quantitative control of tissue-specific function*. Molecular and cellular biology, 1981. **1**(9): p. 843-853.
16. Pinnell, S.R., S. Murad, and D. Darr, *Induction of collagen synthesis by ascorbic acid: a possible mechanism*. Archives of dermatology, 1987. **123**(12): p. 1684-1686.

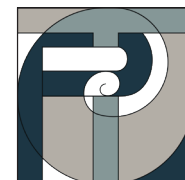
Confidential



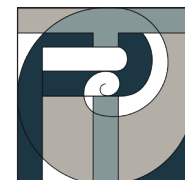
17. Lee, J., et al., *Panax ginseng induces human Type I collagen synthesis through activation of Smad signaling*. Journal of ethnopharmacology, 2007. **109**(1): p. 29-34.
18. Lee, J., et al., *Asiaticoside induces human collagen I synthesis through TGF β receptor kinase (T β RI kinase)-independent Smad signaling*. Planta medica, 2006. **72**(04): p. 324-328.
19. Kim, S.-H., *Method for stimulation collagen synthesis and/or KGF expression*. 2010, Google Patents.
20. Schneider, L.M., D.J. Pusateri, and T.Q. La, *Compositions and methods for stimulating synthesis of pro-collagen or collagen and hyaluronic acid*. 2010, Google Patents.
21. Murakami, H. and H. Kobayashi, *Amino acid composition promoting collagen synthesis*. 2010, Google Patents.
22. Chotphruethipong, L., R.E. Aluko, and S. Benjakul, *Hydrolyzed collagen from porcine lipase-defatted seabass skin: Antioxidant, fibroblast cell proliferation, and collagen production activities*. Journal of Food Biochemistry, 2019. **43**(5): p. e12825.
23. Bellon, G., et al., *Glutamine increases collagen gene transcription in cultured human fibroblasts*. Biochimica et Biophysica Acta (BBA)-Molecular Cell Research, 1995. **1268**(3): p. 311-323.
24. Hamanaka, R.B., et al., *Glutamine metabolism is required for collagen protein synthesis in lung fibroblasts*. American journal of respiratory cell and molecular biology, 2019. **61**(5): p. 597-606.
25. Portu, J., et al., *Amino acid content in red wines obtained from grapevine nitrogen foliar treatments: consumption during the alcoholic fermentation*. Wine Studies, 2014. **3**(1).
26. Benjakul, S., S. Karnjanapratum, and W. Visessanguan, *Hydrolysed collagen from Lates calcarifer skin: Its acute toxicity and impact on cell proliferation and collagen production of fibroblasts*. International Journal of Food Science & Technology, 2018. **53**(8): p. 1871-1879.
27. Vázquez, J.J. and E.S.M. Martínez, *Collagen and elastin scaffold by electrospinning for skin tissue engineering applications*. Journal of Materials Research, 2019. **34**(16): p. 2819-2827.
28. Lin, P.-S., et al., *Transforming growth factor beta 1 increases collagen content, and stimulates procollagen I and tissue inhibitor of metalloproteinase-1 production of dental pulp cells: Role of MEK/ERK and activin receptor-like kinase-5/Smad signaling*. Journal of the Formosan Medical Association, 2017. **116**(5): p. 351-358.
29. Zague, V., et al., *Collagen hydrolysate intake increases skin collagen expression and suppresses matrix metalloproteinase 2 activity*. Journal of medicinal food, 2011. **14**(6): p. 618-624.
30. Proksch, E., et al., *Oral intake of specific bioactive collagen peptides reduces skin wrinkles and increases dermal matrix synthesis*. Skin pharmacology and physiology, 2014. **27**(3): p. 113-119.
31. Garg, C., *Molecular mechanisms of skin photoaging and plant inhibitors*. International Journal of Green Pharmacy (IJGP), 2017. **11**(02).
32. Gref, R., et al., *Vitamin c-squalene bioconjugate promotes epidermal thickening and collagen production in human skin*. Scientific Reports, 2020. **10**(1): p. 1-12.
33. Pinnell, S.R., S. Murad, and D. Darr, *Induction of collagen synthesis by ascorbic acid: a possible mechanism*. Archives of dermatology, 1987. **123**(12): p. 1684-1686.
34. Bolke, L., et al., *A collagen supplement improves skin hydration, elasticity, roughness, and density: Results of a randomized, placebo-controlled, blind study*. Nutrients, 2019. **11**(10): p. 2494.
35. Choi, S.Y., et al., *Effects of collagen tripeptide supplement on skin properties: A prospective, randomized, controlled study*. Journal of Cosmetic and Laser Therapy, 2014. **16**(3): p. 132-137.



36. Park, K.-Y. and J. Kim, Synthesis and Biological Evaluation of Ascorbyl-Conjugated Peptide Derivatives as Collagen Synthesis Stimulating Agents in Human Skin Fibroblasts. *International Journal of Peptide Research and Therapeutics*, 2020: p. 1-8.
37. Chen, X., et al., Panax ginseng total protein promotes proliferation and secretion of collagen in NIH/3T3 cells by activating extracellular signal-related kinase pathway. *Journal of Ginseng Research*, 2017. 41(3): p. 411-418.
38. Lee, R., et al., Ginseng gintonin enhances hyaluronic acid and collagen release from human dermal fibroblasts through lysophosphatidic acid receptor interaction. *Molecules*, 2019. 24(24): p. 4438.
39. Lee, G.Y., et al., Effects of Panax ginseng extract on human dermal fibroblast proliferation and collagen synthesis. *International wound journal*, 2016. 13: p. 42-46.
40. Lu, L., et al., Asiaticoside induction for cell-cycle progression, proliferation and collagen synthesis in human dermal fibroblasts. *International Journal of Dermatology*, 2004. 43(11): p. 801-807.
41. Nowwarote, N., et al., Asiaticoside induces type I collagen synthesis and osteogenic differentiation in human periodontal ligament cells. *Phytotherapy Research*, 2013. 27(3): p. 457-462.
42. Paocharoen, V., The efficacy and side effects of oral Centella asiatica extract for wound healing promotion in diabetic wound patients. *J Med Assoc Thai*, 2010. 93(Suppl 7): p. S166-S170.
43. 1. Garg, C., Molecular mechanisms of skin photoaging and plant inhibitors. *International Journal of Green Pharmacy (IJGP)*, 2017. 11(02).
44. 2. Gref, R., et al., Vitamin c-squalene bioconjugate promotes epidermal thickening and collagen production in human skin. *Scientific Reports*, 2020. 10(1): p. 1-12.
45. 3. Pinnell, S.R., S. Murad, and D. Darr, Induction of collagen synthesis by ascorbic acid: a possible mechanism. *Archives of dermatology*, 1987. 123(12): p. 1684-1686.
46. 4. Bolke, L., et al., A collagen supplement improves skin hydration, elasticity, roughness, and density: Results of a randomized, placebo-controlled, blind study. *Nutrients*, 2019. 11(10): p. 2494.
47. 5. Choi, S.Y., et al., Effects of collagen tripeptide supplement on skin properties: A prospective, randomized, controlled study. *Journal of Cosmetic and Laser Therapy*, 2014. 16(3): p. 132-137.
48. 6. Park, K.-Y. and J. Kim, Synthesis and Biological Evaluation of Ascorbyl-Conjugated Peptide Derivatives as Collagen Synthesis Stimulating Agents in Human Skin Fibroblasts. *International Journal of Peptide Research and Therapeutics*, 2020: p. 1-8.
49. 7. Chen, X., et al., Panax ginseng total protein promotes proliferation and secretion of collagen in NIH/3T3 cells by activating extracellular signal-related kinase pathway. *Journal of Ginseng Research*, 2017. 41(3): p. 411-418.
50. 8. Lee, R., et al., Ginseng gintonin enhances hyaluronic acid and collagen release from human dermal fibroblasts through lysophosphatidic acid receptor interaction. *Molecules*, 2019. 24(24): p. 4438.
51. 9. Lee, G.Y., et al., Effects of Panax ginseng extract on human dermal fibroblast proliferation and collagen synthesis. *International wound journal*, 2016. 13: p. 42-46.
52. 10. Lu, L., et al., Asiaticoside induction for cell-cycle progression, proliferation and collagen synthesis in human dermal fibroblasts. *International Journal of Dermatology*, 2004. 43(11): p. 801-807.



53. Nowwarote, N., et al., Asiaticoside induces type I collagen synthesis and osteogenic differentiation in human periodontal ligament cells. *Phytotherapy Research*, 2013. 27(3): p. 457-462.
54. Paocharoen, V., The efficacy and side effects of oral *Centella asiatica* extract for wound healing promotion in diabetic wound patients. *J Med Assoc Thai*, 2010. 93(Suppl 7): p. S166-S170.
55. Benjakul, S., S. Karnjanapratum, and W. Visessanguan, *Hydrolysed collagen from Lates calcarifer skin: Its acute toxicity and impact on cell proliferation and collagen production of fibroblasts*. *International Journal of Food Science & Technology*, 2018. 53(8): p. 1871-1879.
56. Lee, J., et al., Asiaticoside induces human collagen I synthesis through TGF β receptor I kinase (T β RI kinase)-independent Smad signaling. *Planta medica*, 2006. 72(04): p. 324-328.
57. Chen, X., et al., *Panax ginseng* total protein promotes proliferation and secretion of collagen in NIH/3T3 cells by activating extracellular signal-related kinase pathway. *Journal of Ginseng Research*, 2017. 41(3): p. 411-418.
58. Watanabe-Kamiyama, M., et al., Absorption and effectiveness of orally administered low molecular weight collagen hydrolysate in rats. *Journal of agricultural and food chemistry*, 2010. 58(2): p. 835-841.
59. Osawa, Y., et al., Absorption and metabolism of orally administered collagen hydrolysates evaluated by the vascularly perfused rat intestine and liver in situ. *Biomedical Research*, 2018. 39(1): p. 1-11.
60. Lee, H.-J., et al., Orally administered collagen peptide protects against UVB-induced skin aging through the absorption of dipeptide forms, Gly-Pro and Pro-Hyp. *Bioscience, biotechnology, and biochemistry*, 2019. 83(6): p. 1146-1156.
61. Li, P. and G. Wu, Roles of dietary glycine, proline, and hydroxyproline in collagen synthesis and animal growth. *Amino acids*, 2018. 50(1): p. 29-38.
62. Wang, W., et al., Glycine metabolism in animals and humans: implications for nutrition and health. *Amino acids*, 2013. 45(3): p. 463-477.
63. Karna, E., et al., Proline-dependent regulation of collagen metabolism. *Cellular and Molecular Life Sciences*, 2020. 77(10): p. 1911-1918.
- 64.. Wu, Z., et al., Metabolism, nutrition, and redox signaling of hydroxyproline. *Antioxidants & redox signaling*, 2019. 30(4): p. 674-682.
65. Callejas, A.C.M.M., *Understanding bioidentical hormones and their effect on quality of life*. *Journal of Prescribing Practice*, 2020. 2(1): p. 18-22.
66. Razzak, M. and J.K. De Brabander, Lessons and revelations from biomimetic syntheses. *Nature chemical biology*, 2011. 7(12): p. 865-875.
67. Sharma, S., R. Gupta, and S.C. Thakur, Attenuation of collagen induced arthritis by *Centella asiatica* methanol fraction via modulation of cytokines and oxidative stress. *Biomedical and Environmental Sciences*, 2014. 27(12): p. 926-938.
68. Sabaragamuwa, R., C.O. Perera, and B. Fedrizzi, *Centella asiatica* (Gotu kola) as a neuroprotectant and its potential role in healthy ageing. *Trends in Food Science & Technology*, 2018. 79: p. 88-97.
69. Tsoukalas, D., et al., Discovery of potent telomerase activators: Unfolding new therapeutic and anti-aging perspectives. *Molecular medicine reports*, 2019. 20(4): p. 3701-3708.
70. Riaz, M., et al., *Ginseng: A dietary supplement as immune-modulator in various diseases*. *Trends in food science & technology*, 2019. 83: p. 12-30.



71. Shin, H.-J., et al., *Preventive effects of Korean red ginseng on experimentally induced colitis and colon carcinogenesis*. Journal of Traditional and Complementary Medicine, 2020. 10(3): p. 198-206.
72. Ma, G.-D., et al., *Changbai Mountain ginseng (Panax ginseng CA Mey) extract supplementation improves exercise performance and energy utilization and decreases fatigue-associated parameters in mice*. Molecules, 2017. 22(2): p. 237.
73. Benito-Ruiz, P., et al., *A randomized controlled trial on the efficacy and safety of a food ingredient, collagen hydrolysate, for improving joint comfort*. International journal of food sciences and nutrition, 2009. 60(sup2): p. 99-113.
74. Bosman, F.T. and I. Stamenkovic, *Functional structure and composition of the extracellular matrix*. The Journal of Pathology: A Journal of the Pathological Society of Great Britain and Ireland, 2003. 200(4): p. 423-428.
75. Jeong, S.Y., et al., *Identification of the Phytochemical Compounds and Their Type I Procollagen Induction in Astragalus membranaceus Sprouts Grown under Different Light Conditions*. Journal of Applied Pharmaceutical Science, 2018. 8(06): p. 001-007.
76. Sadiq, A., et al., *Effects of essential amino acid "Tryptophan" in post burn skin wound healing*. International Journal of Biosciences, 2018: p. 147-153.
77. Friedman, M., *Analysis, nutrition, and health benefits of tryptophan*. International Journal of Tryptophan Research, 2018. 11: p. 1178646918802282.
- 78.. Skov, K., et al., *Enzymatic hydrolysis of a collagen hydrolysate enhances postprandial absorption rate—A randomized controlled trial*. Nutrients, 2019. 11(5): p. 1064.
79. Gropper, S.S. and P.B. Acosta, *Effect of simultaneous ingestion of l-amino acids and whole protein on plasma amino acid and urea nitrogen concentrations in humans*. Journal of Parenteral and Enteral Nutrition, 1991. 15(1): p. 48-53.
80. Nakayama, K., C. Sanbongi, and S. Ikegami, *Effects of whey protein hydrolysate ingestion on postprandial aminoacidemia compared with a free amino acid mixture in young men*. Nutrients, 2018. 10(4): p. 507.
81. Han, B. and M.E. Nimni, *Transdermal delivery of amino acids and antioxidants enhance collagen synthesis: in vivo and in vitro studies*. Connective tissue research, 2005. 46(4-5): p. 251-257.
82. Kwon, Y.W., et al., *N-acetylated proline-glycine-proline accelerates cutaneous wound healing and neovascularization by human endothelial progenitor cells*. Scientific reports, 2017. 7(1): p. 1-13.
83. Corsetti, G., et al., *Topical application of dressing with amino acids improves cutaneous wound healing in aged rats*. Acta histochemica, 2010. 112(5): p. 497-507.
84. Al-Niaimi, F. and N.Y.Z. Chiang, *Topical vitamin C and the skin: mechanisms of action and clinical applications*. The Journal of clinical and aesthetic dermatology, 2017. 10(7): p. 14.
85. Pullar, J.M., A.C. Carr, and M. Vissers, *The roles of vitamin C in skin health*. Nutrients, 2017. 9(8): p. 866.
- 86.. Escobar, S., et al., *Effectiveness of a formulation containing peptides and vitamin C in treating signs of facial ageing: three clinical studies*. International Journal of Cosmetic Science, 2021. 43(2): p. 131-135.
87. Venesia, N.F., E. Fachrial, and I.N.E. Lister, *Effectiveness Test of Centella Asiatica Extract on Improvement of Collagen and Hydration in Female White Rat (Rattus Norwegicus Wistar)*. American Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS), 2020. 65(1): p. 98-107.



88. Hwang, E., et al., *Efficacy and safety of enzyme-modified Panax ginseng for anti-wrinkle therapy in healthy skin: a single-center, randomized, double-blind, placebo-controlled study*. Rejuvenation research, 2015. 18(5): p. 449-457.
89. Ammala, A., *Biodegradable polymers as encapsulation materials for cosmetics and personal care markets*. International journal of cosmetic science, 2013. 35(2): p. 113-124.

Confidential