CLINICAL SUMMARY

Effect of a Specialized Amino Acid Mixture on Human Collagen Deposition

Williams JZ, Abumrad N, and Barbul A. *Annals of Surgery*, 2002;236(3):369-375.

Collagen is an important component in all phases of the wound healing process.

In order for wounds to completely heal they require collagen synthesis and scar formation to occur. Research has shown that specific nutrients can enhance collagen deposition.[1]

The Williams study reported on the effect of a specialized amino acid supplement (Juven) consisting of arginine, glutamine and ß-hydroxy-ß-methylbutyrate (HMB) on collagen deposition using an experimental wound micromodel in 35 healthy elderly volunteers (mean age: 75.4 years).

The study was a prospective, randomized, controlled, double-blind study conducted at a single site. The subjects were randomized to receive either the experimental amino acid mixture (Juven®, n=18) or an isonitrogenous, isocaloric control supplement of nonessential amino acids (alanine, glutamic acid, glycine and serine, n=17). Supplements were administered twice daily for 14 days. The experimental wound healing model involved the placement of two small, sterile polytetrafluoroethylene (PTFE) tubes implanted subcutaneously into the deltoid region. Each tube measured 5 cm in length and 1 mm in diameter.[2]

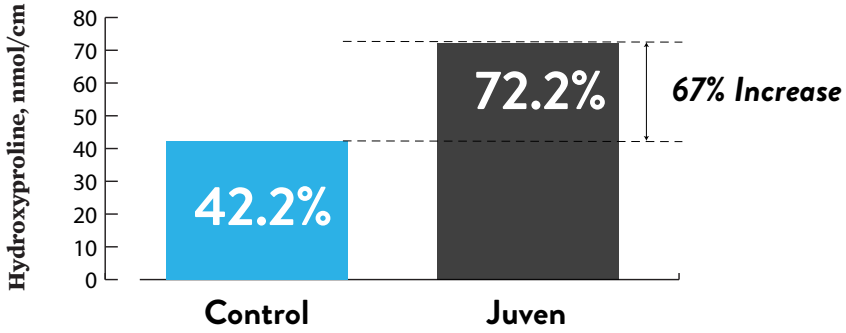
A single tube was removed after 7 and 14 days for evaluation of collagen matrix deposition, as measured by hydroxyproline accumulation in the tube. Hydroxyproline is an amino acid that is unique to collagen and its level correlates with the total amount of collagen at the wound site.

Abbott

Results

The supplements were well tolerated, and no side effects were reported. There were also no changes in either liver or renal function during the study. The results showed that at 7 days there was no significant difference between the two groups. However, after 14 days, hydroxyproline content was 67% greater ($p<0.05$) in the group that received Juven compared to the control group, indicating significantly greater collagen deposition.

Hydroxyproline Content after 14 Days



NUTRITION CONCLUSION

In an experimental model of wound healing, oral administration of a supplement containing arginine, glutamine and HMB significantly enhanced collagen synthesis, as reflected by an increase in hydroxyproline content, in healthy elderly volunteers.

REFERENCES:

1. Seifter E and Barbul A. Use of exogenous amino acids in wound healing. In Ziegler TR, Pierce GF, Herndon DN, eds. *Growth Factors and Wound Healing*. New York: Springer-Verlag, 1997;79-91.

2. Goodson WH and Hunt TK. Development of a new miniature method for the study of wound healing in human subjects. *J Surg Res* 1982;33:394.

Abbott