

Arginine and proline enriched diet may speed wound healing in diabetes

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Chronic wounds such as foot ulcers are a common problem for diabetics and are the cause of more than 80 percent of the lower leg amputations in these patients. There is currently no effective way to improve healing of these types of wounds, but new research offers hope.

French researchers found that diabetic rats on a high protein diet with arginine and proline—specific molecules found in protein—showed better [wound healing](#) over rats fed either standard or high protein food without arginine and proline supplementation.

The article is entitled "[Arginine plus proline supplementation elicits metabolic adaptation that favors wound healing in diabetic rats.](#)" It appears in the online edition of the [American Journal of Physiology – Regulatory, Integrative and Comparative Physiology](#) published by the [American Physiological Society](#).

Methodology

Researchers divided 18 rats into three groups that were either fed a standard diet, a high-protein diet, or a [high protein diet](#) supplemented with arginine and proline (ARG+PRO). On the first day of the experiment, each rat was given an incision, under which a sponge was placed in order to collect wound-healing fluid. To assess skin regrowth and healing, researchers also removed two full-thickness sections of skin from the rats' backs each day from day 1 until day 5, when the

experiment ended.

At the end of the experiment, the rats' blood was analyzed for blood sugar, insulin, and amino acid concentrations. The wounds on their backs were examined for skin regrowth and development of new blood vessels. And, finally, macrophages were collected from the sponges and analyzed for indications of cytokine stimulation and pro-inflammatory activity.

Results

Rats on both high protein diets had better [nitrogen balance](#) than those on the standard diet. However, the wounds of the rats on the ARG+PRO diet showed more new blood vessel growth on day 5. New [blood vessel growth](#) is an essential part of wound healing as the blood vessels supply nutrition and oxygen to growing tissue.

Furthermore, the macrophages in the ARG+PRO group showed less cytokine stimulation and pro-inflammatory activity than the other groups. This indicates a better environment for promoting wound healing, as inflammation slows the healing process.

The researchers did not find a difference in skin regrowth between groups, but their findings may be limited because of the small number of rats in the study. Additionally, researchers did not measure markers of collagen deposition in the wound, and the study cannot confirm the beneficial effect of arginine on collagen deposition and wound breaking strength reported in previous research.

Importance of the Findings

This study suggests that arginine and proline supplementation could offer new hope for effective treatment in diabetic patients with [chronic](#)

[wounds](#). This is a promising new area of research where there are no existing effective treatments for these patients.

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