

How Soon Should I Expect to Experience The Effects of Dietary Supplements?

Insight From Mannatech's R&D Department

Introduction

Do the foods we eat affect the way we feel? Absolutely! Anyone who has missed a meal appreciates the surge of energy and the feeling of well-being that a good meal provides.

But what about the effects of foods or dietary supplements on how we feel in a broader sense? Sometimes, response to dietary changes may be obvious and rapid, such as improved energy levels and a renewed sense of well-being. However, long-term, good health depends on a body built with healthy cells. The question then becomes, "How long will it take before my dietary changes build new, perhaps healthier cells?"

Fundamentals of Human Cells

How often are new cells made? That depends on the type of cell. Our bodies are composed of about 200 different cell types. Only a few are never replaced; these "immortal" cells include auditory hair cells, heart muscle cells, and nerve cells.

What about the rest of the cell types? The table below provides lifespan information for some of the remaining 197 types.^{1,2}

LIFESPAN OF SOME CELLS OF THE HUMAN BODY	
CELL TYPE	LIFESPAN
Granulocytes: eosinophils, basophils, neutrophils	10 hours - 3 days
Stomach lining cells	2 days
Sperm cells	2-3 days
Colon cells	3-4 days
Epithelia of small intestine	1 week or less
Platelets	10 days
Skin epidermal cells	2-4 weeks
Lymphocytes	2 months – more than a year (highly variable)
Red blood cells	4 months
Macrophages	Months-years
Endothelial cells	Months-years
Pancreas cells	1 year or more
Bone cells	25-30 years

What does all of this mean? While some cells are rapidly replaced, many others survive for months – or even years! So it can take months or longer before our changed dietary habits can profoundly affect our cells.

Clinical Studies

Few studies have examined cellular response to nutritional change. In one study of 16 distance runners consuming nutritional supplements designed to improve red blood cell (RBC) status, no improvement was noted after one month



of supplementation. At six months, however, significant improvements in all measures were found, despite heavier training activity (which can depress RBC status).³

Studies examining the effects of nutrient deprivation and repletion are limited. The few studies that have been performed often reveal the large variability of response between individuals and emphasize the delay before these nutrients take effect.

Let's consider vitamin C. Two studies on vitamin C reported that individual responses to vitamin C deprivation (and supplementation) were highly variable.^{4,5} The first sign of vitamin C depletion took roughly one month to appear; by the fourth month of deprivation, 1/3 of the participants had almost completely depleted their bodily reserves, but the other 2/3 continued to have acceptable amounts. Following supplementation a return to normal plasma levels often took well over a month, and in some cases 100 days was required.

Summary

Some people experience a rapid response to dietary changes. For many, however, dietary improvements must be sustained for at least a few months before cellular function can be expected to improve.

REFERENCES

1. Differentiated cells and the maintenance of tissues. In *Molecular Biology of the Cell*. Alberts B, Bray D, Lewis J, et al., Eds. New York, NY: Garland Publishing, 1994.
2. *Science and Technology Desk Reference*. 2nd Edition, Pittsburgh, PA: Gale Research, 1996.
3. Colgan M. Effects of multinutrient supplementation on athletic performance. In *Sport, Health, and Nutrition*. Katch FI, Ed. Champaign, IL: Human Kinetics, 1986.
4. Baker EM, Hodges RE, Hood J, et al. Metabolism of 14C- and 3H-labeled L-ascorbic acid in human scurvy. *Am J Clin Nutr* 1971; 24(4): 444-454.
5. Hodges RE, Hood J, Canham JE, et al. Clinical manifestations of ascorbic acid deficiency in man. *Am J Clin Nutr* 1971; 24(4): 432-443.