

Less is more when restraining calories boosts immunity

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Scientists funded by the Agricultural Research Service (ARS) found that volunteers who followed a low-calorie diet or a very low-calorie diet not only lost weight, but also significantly enhanced their immune response. The study may be the first to demonstrate the interaction between calorie restriction and immune markers among humans.

The lead researcher, Simin Nikbin Meydani, is director of the Jean Mayer USDA Human Nutrition Research Center on Aging (HNRCA) at Tufts University in Boston, Mass., and also of the HNRCA's Nutritional Immunology Laboratory.

The study is part of the "Comprehensive Assessment of Long-Term Effects of Reducing Intake of Energy" trial conducted at the HNRCA. As people age, their [immune response](#) generally declines. Calorie restriction has been shown to boost these immune responses in animal models.

In the study, 46 overweight (but not obese) men and women aged 20 to 40 years were required to consume either a 30-percent or 10-percent calorie-restricted diet for six months.

Prior to being randomly assigned to one of the two groups, each volunteer participated in an initial 6-week period during which measures of all baseline study outcomes were obtained. All food was provided to participants.

For the study, the researchers looked at specific biologic markers. A skin test used called DTH (delayed-type hypersensitivity) is a measure of immune response at the whole body level.

The researchers also examined effects of calorie restriction on function of T-cells--a major type of white blood cell--and other factors on the volunteer's immune system.

DTH and T-cell response indicate the strength of cell-mediated immunity. One positive was that DTH and T-cell proliferative response were significantly increased in both calorie-restrained groups.

These results show for the first time that short-term [calorie restriction](#) for six months in humans improves the function of T-cells.

More information: Details of this 2009 study can be found in the publication Journal of Gerontology, Biological Sciences.

Provided by United States Department of Agriculture

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