Buckwheat enhances the production of a protein that supports longevity

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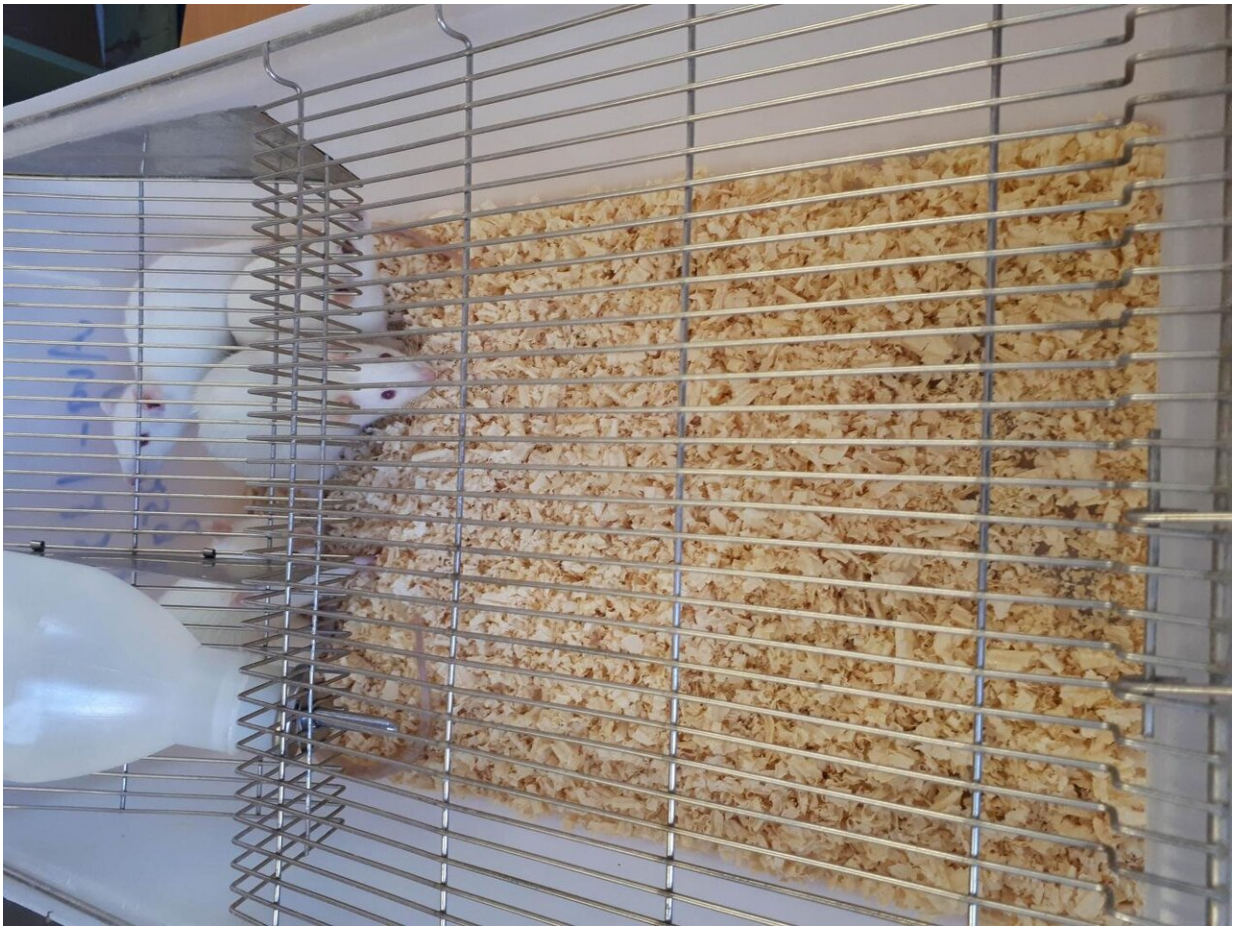

Lab animals. Courtesy of Shubhra Pande. Credit: Shubhra Pande

A healthy low-calorie diet that contains plant products can help us

improve the level of sirtuin 1 (SIRT1) protein production that is known to increase life expectancy. A team of scientists from Krasnoyarsk conducted an experiment to see how buckwheat affected the health of rats. The only known method to optimize the level of this protein is calorie restriction. But why would healthy people be subjected to calorie restriction without any medical emergency? According to the researchers, a buckwheat-based diet helps to increase the level of SIRT1 protein that protects all the cells of the body and enhances longevity. At the same time, there is no need to starve. The results of the study were published in the *Journal of Cereal Science*.

With increased stress levels and wide availability of junk food, today we have to take special care about our health. Vitamins and amino acids are precursors of important regulatory and building molecules in our bodies, and a diet rich in them can help keep one's digestive system healthy and support it in case of health issues. On the contrary, an unbalanced diet or overeating can cause various diseases, including cancers.

SIRT1 is a protein that senses nutrient status of cells. When SIRT1 levels in a cell are intentionally increased, its aging process slows down, and its stress resistance improves. However, the excess of SIRT1 in the organs and tissues of a living being is a sign of hunger which may lead to anemia and other negative effects.

A team of biologists from the School of Fundamental Biology and Biotechnology of Siberian Federal University added 30% buckwheat (which is rich in nutrients) to the diet of rats and studied its impact on their health. The animals were divided into three groups with eight rats in each. The first (control) group got a regular amount of feed; in the second (calorie restriction group) the portions were reduced by 30%, and the third (experimental) group got regular feed with the addition of ground buckwheat that amounted to 30% of the total feed weight. Buckwheat contains dietary fiber that can only be partially digested by

humans and rats. In view of that, the scientists calculated the daily feed volume for the third group for it to have the same nutritional value as the diet of the second group.

After eight weeks of the experiment, samples were taken from the blood, liver, kidneys, and stomach of the animals to measure the content of SIRT1. To do so, the scientists used molecules that produce a colored substance after linking with SIRT1. Moreover, the team monitored the weight of the rats in the course of the experiment. The animals from the third group gained more weight than the ones from the second group, even though both groups consumed an equal amount of calories. This observation indicates that buckwheat ensures proper growth and development in the long run. The highest level of SIRT1 production was registered in the calorie restriction group. However, this effect was achieved at the cost of lowering body and organ weights. In the experimental group, the levels of the protein were higher than in the control group, but no weight loss was observed.

"The results of the study show that a diet that includes buckwheat has the effect of calorie restriction, because this grain contains a lot of indigestible fiber. Buckwheat is a low calorie product, and when added to a diet, it increases the production of SIRT1. This protein, in turn, protects the cells of the digestive system without causing hunger and loss of growth in animals. We believe that other plant products, such as grain, vegetables, fruit, or nuts, have similar a effect on SIRT1 production and on the health in general. If you want a healthy and long life, eat more of them," said Shubhra Pande, the author of the research and the Post-doctoral fellow of the Department of Biophysics at the School of Fundamental Biology and Biotechnology of Siberian Federal University.

More information: Shubhra Pande et al, Dietary buckwheat enhances sirtuin1 without calorie restriction, *Journal of Cereal Science* (2020). DOI: 10.1016/j.jcs.2020.103004

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