

Deemed essential to health for decades, chromium has no nutritional effect, researchers show

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Despite a long-held acceptance that healthy diets must incorporate chromium III, new research indicates the element has no nutritional benefit, according to a paper authored by University of Alabama researchers.

Research, publishing in an upcoming issue of the [Journal of Biological Inorganic Chemistry](#), strongly indicates that chromium, which the National Academies of Sciences accepted as an essential element in 1980, is not an essential element, said Dr. John Vincent, professor of chemistry at UA and a co-author of the study.

“This means that the status of chromium in numerous nutrition and related textbooks and in the dietary guidelines of the national academies and USDA (and similar agencies) will need to be rewritten,” said Vincent, one of the study’s primary authors, along with Dr. Jane Rasco, an assistant professor of biological sciences at UA.

In the U.S. Department of Agriculture-funded study, the researchers fed one group of rats a purified diet containing as little chromium (III) as practically possible for six months while closely monitoring the rat’s health through various measurements including blood tests. In other rats, the researchers added varying amounts of chromium to the rats’ diets while monitoring their health.

“The diet that had as little chromium (III) as we could put in it and the diet that had an amount corresponding to a human taking a standard nutritional supplement with chromium had no effect on the rats,” Vincent said. “They had the same body mass, they ate the same amount of food, and they were able to metabolize glucose exactly the same. There were no differences in the health of the rats,” he said.

“Together with the results of other recent studies, these results clearly indicate that chromium can no longer be considered an essential element,” the researchers wrote in their paper’s abstract.

Over the last decade, scientists began growing increasingly skeptical of the purported nutritional benefits of chromium, but the researchers’ recently published abstract stated this was the first time the element had been studied in “carefully controlled metal free conditions using a series of purified diets containing variable chromium contents.”

In the 1950s, USDA workers proposed that chromium was essential, and in 1980 the National Academy of Sciences further validated that claim by setting an “adequate intake” for the amount of chromium one should incorporate into his or her diet.

“If you looked at the list of everything you needed in your diet – all the vitamins and proteins and carbohydrates – chromium would be listed on it along with iron and zinc and vitamins A, B and C and others,” Vincent said. “We need to take it off the list.

“To be an essential element, you must show that if you take it out of the diet, the subject has adverse health effects; and if you restore it, those effects are reversed. Or, you need to show that it binds to a specific molecule in the body that has a specific function. The latter has not been done so the findings had previously relied on the nutritional studies.”

While the latest research showed chromium to have no nutritional benefit, Vincent said it did show in the rats the potential to have a therapeutic effect on diabetes when consumed in large doses.

“When we went to extremely high doses of chromium, then we also saw the rats had an increased sensitivity to insulin so their bodies did not have to produce as much insulin to metabolize excess sugar. So, we not only saw no nutritional effect, but we also could establish a drug-like effect.”

Research on chromium’s potential impact on diabetes is ambiguous, Vincent said, and it needs further study.

“If you have altered abilities to metabolize lipids and carbohydrates and you take an extremely large dose of chromium, it can lead to improvements – at least based on the findings obtained from the animal models.”

Vincent referred to the sale of chromium nutritional supplements, such as chromium picolinate, as “misguided,” based on current research, although further research into effects on diabetics could alter the situation, he said. [Chromium](#) nutritional supplements are, Vincent said, the second best selling mineral supplement, after calcium, with annual sales of products containing them of about one-half billion dollars.

Provided by University of Alabama

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