

Lowprotein

[Science](#), [Biology](#)



Not all naturally occurring metals are used by the body for important biological processes. Lead and cadmium are examples of these metals that are not essential for life but may even cause toxicity and death if taken in large doses. A study conducted in Japan showed a correlation between protein intake with the increased vulnerability for intoxication of cadmium (Tavari 1986). Rats given a low protein diet were observed to have higher toxicity from these metals that were also detected in the urine and feces (Suzuki1984). A low protein diet in humans is usually advised to those with kidney and liver diseases and as a result, this negative effect of higher metal toxicity is important to understand.

Metals act by binding to organic compounds subsequently altering their structure and possibly modifying their function. When the function is not carried out well, this can lead to cell death and inactivation of the production of important enzymes ("Metals as toxins"). For instance, a metal compound can compete with a biologically significant element such as oxygen to create an enzyme responsible for degrading glucose. If this metal successfully defeats oxygen, the enzyme may not be produced; thus, glucose will not be degraded and possibly accumulated. This is a simple example of what a metal can do to the body.

In the case of normal protein intake, the body has enough proteins that can bind to harmful compounds such as metals. Similar to the action of a lock and key, a specific protein can complex with damaging bioelements and then excrete them outside the body to prevent possible internal damage.

Metallothionein specifically works as a chelating agent and combines itself with cadmium, for example and is excreted out of the body while Selenium, a

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protein abundantly found in egg whites, suppresses the toxic effect of metals (“Metals as toxins”). A low protein intake thus, have a significant effect in resulting to high levels of cadmium and lead in the blood since most protein clearly function in sweeping out these harmful metals by binding with them and then carrying them out of the body.

References

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