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How obesity affects vitamin D metabolism

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A new *Journal of Bone and Mineral Research* study confirms that vitamin D supplementation is less effective in the presence of obesity, and it uncovers a biological mechanism to explain this observation.

The study reveals that obese mice have very low levels of the enzyme in

the liver that converts vitamin D into 25-hydroxyvitamin D (calcidiol), which is the major form of vitamin D in the blood. Therefore, it may be more effective to treat vitamin D insufficiency in obese individuals with calcidiol rather than with other forms of vitamin D.

"Low circulating levels of 25-hydroxyvitamin D are common in obesity and have been attributed to sequestration of vitamin D in fat cells. Here we propose a second mechanism with greater biological implications: obesity reduces the ability of the liver to convert vitamin D into 25-hydroxyvitamin D," said lead author Dr. Jeffrey Roizen, of The Children's Hospital of Philadelphia. "Our observations show that this early step in activating vitamin D is influenced by obesity, and suggest that obesity-related effects on the liver can have clinically important systemic effects on bone and mineral metabolism. Further, while we often think of low vitamin D causing obesity, this work shows that an illness or pathology (like obesity) can cause low vitamin D."

More information: Jeffrey D Roizen et al, Obesity Decreases Hepatic 25-Hydroxylase Activity Causing Low Serum 25-Hydroxyvitamin D, *Journal of Bone and Mineral Research* (2019). DOI: 10.1002/jbmr.3686

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