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Vitamin D: Should a regular dose be part in immunomodulation of regulatory T cells in immunomediated diseases?

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Vitamin D receptors are found on several cells of the innate and adaptive immune system and the impact of vitamin D deficiency in the pathogenesis of immunomediated diseases such as diabetes type 1, multiple sclerosis and inflammatory bowel diseases have been highlighted. Animal and *in vitro* studies suggest that vitamin D is involved in reducing the risk of autoimmunity by modulating regulatory T cells, which are pivotal to maintain self-tolerance. We have previously shown that cholecalciferol (vitamin D3-a precursor of the active metabolite) is able to increase frequency of peripheral regulatory T cells in the blood without negatively effecting suppressive capacity and apoptosis in healthy humans and *in vitro* exposure to cholecalciferol as well leads to increased percentage of regulatory T cells. We hypothesize that cholecalciferol may increase regulatory T cells in the intestinal mucosa, which harbors a large number of immune cells in the gut-associated lymphoid tissue. In a systematic assessment we determined the distribution of CD4+, CD8+ and Foxp3+ regulatory T cells in several regions of the upper and lower gastrointestinal tract. Our data show a significant variation in the baseline T cell landscape along the human gastrointestinal tract and an immunomodulatory effect of cholecalciferol on T cells subpopulations in the intestinal mucosa of humans. These studies support the role of vitamin D as an immunomodulatory adjunct in the therapy of immunomediated diseases.

Biography

Gerlies Treiber received her MD from Medical University Graz in 2002 and completed a Postdoctoral research fellowship in Dr. Robert Rizza lab at Mayo Clinic, Rochester, MN, US. She is an active hospital clinician and Assistant Professor at the Division of Endocrinology and Metabolism of Medical University Graz, Austria. In the past years she has been studying the role of Vitamin D in immunomodulation of regulatory T cells in humans and diabetes type 1. She has presented in national/international meetings and published several articles in peer-reviewed journals.

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