

Matrix metalloproteinase-10 and microvascular complications of type 1 diabetes: might vitamin D status be relevant?

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Abbreviation

MMP Matrix metalloproteinase

To the Editor: Inflammation, with excessive production of matrix metalloproteinase (MMP)-9 in unstable plaque, has a major role in the progression of macrovascular disease, including the development of acute events [1]. In a recent issue of *Diabetologia*, Toni et al [2] report increased circulating MMP-10 in association with increased microvascular disease risks in type 1 diabetes; this finding is in line with the earlier observations, and, as the authors suggest, provides a potential therapeutic target for reducing microvascular disease risks. Vitamin D repletion is associated with reductions in macrovascular disease risks and, although causation remains unproven, plausible mechanisms exist [3]. Increased circulating MMP-9, inversely correlated with severity of vitamin D insufficiency, was reduced by ~70% in response to modest improvement in vitamin D repletion in healthy South Asians [4], and circulating MMP-9 increased with reduction in vitamin D status in submariners after an 85 day submerged patrol [5]. Furthermore, MMP-10 formation, increased in peripheral blood mononuclear cells by exposure to *Mycobacterium tuberculosis*, was inhibited by activated vitamin D [6]. It would, therefore, be useful if Toni and colleagues could examine serum 25-hydroxyvitamin D concentrations in the participants in this study as a potential independent predictor

for MMP-10 and microvascular complications, since lower vitamin D status has been found to be associated with increases in the prevalence of both diabetic retinopathy and diabetic nephropathy in a study of patients with type 2 diabetes [7]. If there is such an association, then the potential for reduction in circulating MMP-10 by correction of vitamin D deficiency should be examined early in the search for pharmacological agents to lower MMP-10 production in diabetes, since modest vitamin D supplementation might prove to be a particularly cost-effective way of reducing the problems of diabetic complications.

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