required to observe the endogenous metabolites presented in the EBC. Finally, we propose UPLC-MS and the use of non-reusable devices as a standard metabolomic approach in the analysis of EBC.

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Hypercalscaemia in asymptomatic sarcoidosis unmasked by a vitamin D loading dose

To the Editors:
The risk of occurrence of hypercalcaemia induced by vitamin D in certain conditions has recently been summarised by Kallas et al. [1]. Despite the high prevalence of vitamin D deficiency among the healthy population and observational associations with cardiovascular disease, autoimmune diseases, some types of cancer, tuberculosis and mortality [2, 3], there are currently no data to justify widespread use of vitamin D supplementation, taking into account the lack of large prospective randomised controlled trials.

We would like to share our experience with calcitriol-mediated hypercalcaemia in an apparently healthy individual. A 26-yr-old obese female with a body mass index of 48.4 kg·m⁻² was transferred to the endocrinology outpatient clinic of the
High angiotensin-converting enzyme levels (176.7 U/L by chest radiography, with bilateral hilar lymphadenopathy. During the ensuing work-up, stage I sarcoidosis was diagnosed with suppressed parathyroid hormone (PTH) level (table 1).

Vitamin D deficiency is highly prevalent, especially in obese individuals [4], but also in respiratory disease [5, 6]. Although vitamin D has a low-risk profile and a broad therapeutic window, we suggest that the use of vitamin D in healthy individuals outside of clear indications or clinical trials should be questioned for two reasons: first, there are currently no large prospective randomised controlled trials showing that vitamin D supplementation leads to beneficial outcomes; and, secondly, because of the potential risk of calcitriol-mediated hypercalcaemia that may arise from a variety of potentially unrecognised or asymptomatic conditions, as in the present patient. Asymptomatic sarcoidosis, especially in stage I, is not uncommon [7]. Vitamin D and calcium metabolism is abnormal in sarcoidosis. A Japanese group reported hypercalcaemia in 7% of newly diagnosed patients [8], whereas, in the ACCESS (A Case Control Etiologic Study of Sarcoidosis) cohort, hypercalcaemia and/or hypercalciuria were found in 4% of recently diagnosed patients [9] even without concomitant vitamin D therapy. Calcitriol-induced hypercalcaemia can occur in sarcoidosis when macrophages are challenged with sudden availability of the substrate 25-OH-D because pulmonary alveolar macrophages possess a 1α-hydroxylase and are able to produce 1,25-(OH)2-D. Furthermore, the feedback mechanism seems to be less effective [6].

Although vitamin D is an important immunomodulator that may have a positive effect in patients with sarcoidosis [10], vitamin D loading doses are not recommended and vitamin D repletion must be undertaken with great care [6].

We think it is important to carefully weigh the risk/benefit ratio and consider the risk of hypercalcaemia in apparently healthy patients on vitamin D therapy. Therefore, calcium levels should be checked regularly when administering vitamin D, since hypercalcaemia is often asymptomatic.

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