

# Searching for specific responses to copper exposure: An in vitro copper challenge in peripheral mononuclear cells

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Acute and chronic cellular responses to changes in copper availability are not clear when these changes are mild to moderate, as what often occur in human daily life. The aims of the study were to develop an in vitro copper challenge in peripheral mononuclear cells (PMNCs) obtained from healthy individuals with different preconditioning copper treatments, and measure copper and iron content, and MT2A and TfR mRNA abundance after the copper challenge. (1) Screening using clinical and biochemical indicators defined healthy participants, who received 8 mg Cu/day (copper sulfate) or placebo for 2 months. (2) Mononuclear cells were obtained on days 0, 2 (acute changes), and 60 (chronic changes). (3) Cells were challenged with a 1, 5, and 20  $\mu$ M Cu-histidine for 20 h, at T0, T2, and T60. Cells from both supplemented and placebo individuals showed a clear trend to increase copper content when there was more copper in the media. Increases were greater in the supplemented group, larger with 20  $\mu$ M