Micronutrient deficiencies an unmet need in heart failure.

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BACKGROUND: Heart failure (HF) is a common, disabling, and costly disease. Despite major advances in medical therapy, morbidity and mortality remain high, in part because current pharmacological regimens may not fully address some unique requirements of the heart for energy.

DISCUSSION: The heart requires a continuous supply of energy-providing substrates and amino acids in order to maintain its function. In HF, defects in substrate metabolism and cardiac energy and substrate utilization may contribute to contractile dysfunction. HF is often accompanied by a deficiency in key micronutrients required for unimpeded energy transfer. Correcting these deficits has been proposed as a method to limit or even reverse the progressive myocyte dysfunction and/or necrosis in HF.

SUMMARY: This review summarizes the existing HF literature with respect to supplementation trials of key micronutrients involved in cardiac metabolism: coenzyme Q10, l-carnitine, thiamine, and amino acids, including taurine. Studies using a broader approach to supplementation are also considered. Although some of the results are promising, none are conclusive. There is a need for a prospective trial to examine the effects of micronutrient supplementation on morbidity and mortality in patients with HF.

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