The cardioprotective role of trimetazidine on cisplatin-induced cardiotoxicity

To the Editor,

We have read the article by Zhao (1) entitled "Protective effects of trimetazidine and coenzyme Q10 on cisplatin-induced cardiotoxicity by alleviating oxidative stress and mitochondrial dysfunction" with great interest. The authors reported that trimetazidine and coenzyme Q10 showed protective effects against cispaltin-induced cardiotoxicity by reducing oxidative stress. First, we wish to ask the authors how they have rationalized the concentrations of trimetazidine (200 μM) and coenzyme Q10 (200 mg/L) they used in the ventricular myocytes? We would like to emphasize some important points about this well-written study.

Intracellular calcium plays a key role in cellular homeostasis. One of the most important mechanisms underlying chemotherapy-induced cardiotoxicity is increased calcium (Ca^{2+}) levels in cardiomyocytes. Increased Ca^{2+} levels stimulate reactive oxygen species and there is a bidirectional interaction between these parameters (2). It has been reported that trimetazidine shows cardioprotective effects by decreasing the intracellular calcium accumulation by controlling the membrane ion gradients (3). It has been shown that caspase 3 and caspase 9 activites play an important role in mitochondrial apoptotic pathways (4). Lui et al. (5) showed that trimetazidine pretreatment could attenuate myocardial apoptosis and improve cardiac function by decreasing apoptotic rate and the expression levels of cleaved caspase 3 and 9.

Therefore, we think that measuring the aforementioned parameters, such as intracellular calcium levels and caspase 3 and caspase 9 activity, could provide insights into the cardioprotective role of trimetazidine in chemotherapy-induced cardiotoxicity.

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