Letter to the Editor

On the role of coenzyme Q₁₀ in cardiovascular diseases

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Judging from the response, Dr Bliznakov appears to have completely missed the point of our article published in the section on ‘Cardiovascular Conundra Series’ [1]. Our paper discusses only concepts as well as provides a glimpse of the evolution of our knowledge-base on the significance of oxidative stress in heart disease, since the time of the first discovery of oxygen. The paper was never meant to offer a detailed discussion of any individual, favourite antioxidant. We all know that a current list of potential antioxidants can run into several pages and it keeps growing everyday. Thus, any attempt to mention all antioxidants in any significant way will be a futile exercise.

In Dr Bliznakov’s commentary, it is alleged that we have not provided enough clinical data on the use of antioxidants in different heart disease conditions. For the past 20 years, our laboratory has focussed on studying the role of antioxidants and oxidative stress in the development of heart failure and several reviews have been published by us on these aspects [2–4]. Although significant advances have been made in our understanding of the role of oxidative stress in the pathogenesis of heart failure, there are not enough clinical trials which have established unequivocally the use of antioxidant therapy for heart failure. Given the scope of the ‘Cardiovascular Conundra Series’ – an interesting feature of this journal, it is not desirable to get into the details of any one antioxidant including coenzyme Q₁₀. However, our paper adequately but concisely discusses the available clinical data which suggests the involvement of oxidative stress in the pathogenesis of heart failure and also highlights the potential for antioxidant therapy.

As suggested by Dr Bliznakov, we are also aware of the studies on the protective role of coenzyme Q₁₀ in cardiomyopathy and heart failure. We appreciate the efforts of Dr Bliznakov for putting together a mini-review on the topic of coenzyme Q₁₀ and its protective role in cardiovascular diseases. However, a balanced discussion using more current references on this topic would have been very useful. Most of the references provided by Dr Bliznakov are either book chapters or articles published in the 1970s. A quick survey of more recent publications on this topic reveals a mixed message about the beneficial effects of coenzyme Q₁₀. In this regard, there are experimental [5] as well as clinical studies [6–8] which support the notion that coenzyme Q₁₀ has beneficial effects for cardiovascular complications. However, literature is also equally replete with findings, particularly clinical studies, that do not support this view [9–12]. Coenzyme Q₁₀ treatment was found to have minimal beneficial effects on the quality of life and exercise capacity in patients with congestive heart failure [9]. It was also found to be ineffective in improving hemodynamic and electrocardiogram parameters as well as in reducing ventricular arrhythmias in patients suffering from idiopathic dilated cardiomyopathy [12]. In another study on patients undergoing coronary revascularization, Coenzyme Q₁₀ did not attenuate the increase in creatine kinase levels [10]. Thus, a judicious discussion of coenzyme Q₁₀ in a major review by an expert is needed for a balanced analysis of this issue.

The concept of the role of oxidative stress in the pathogenesis of adriamycin-induced cardiomyopathy as well as congestive heart failure has far advanced than what is contained in the 1981 report [13] used by Dr Bliznakov to make the point. Readers are directed to more current reviews on the topic including one by Olson and associates [3,14]. However, it is important to point out that in addition to free radical production, briefly eluded to by Dr Bliznakov, there is also adriamycin-induced reduction in myocardial antioxidant enzymes and an increase in plasma lipids [15,16]. The latter two changes also play a significant role in the pathogenesis of this cardiomyopathy [3,15]. Although some reports have provided evidence for the beneficial effects of coenzyme Q₁₀, these studies have not found their way into clinical use. Obviously, a careful,
expert analysis of the literature on coenzyme Q₁₀ in adriamycin cardiomyopathy is also warranted, if we are to synthesize a picture closer to the reality. In our view, a large multi-centre, clinical trial is required to settle the issue on the beneficial effects of coenzyme Q₁₀ in cardiovascular diseases including adriamycin-induced congestive heart failure.

References