

increase is an essential effect of catecholamine release. The possible reason underlying these conflicting results is related to the follow-up duration and amount of energy drink consumed (2, 3).

In addition, there was no data regarding smoking history or current smoking status. The vasopressor and tachycardia effects of smoking are associated with an increase in the plasma catecholamine concentration (4). Likewise, there was a strong relationship between heart rate variability and smoking (5).

In the light of this knowledge, authors should mention regarding the smoking habits of participants. Moreover, the follow-up duration and amount of energy drinks consumed should be standardized.

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### Author's Reply

To the Editor,

We thank the authors for their great interest in our work entitled "Effects of energy drinks on blood pressure, heart rate, and electrocardiographic parameters: an experimental study on healthy young adults" published in *Anatol J Cardiol* 2016; 16: 94-9 (1). In addition to our discussion, they also notified the incoherent results of different studies on the heart rate (HR) response after energy drink consumption. Authors of the letter, however, stated that an HR increase is an essential effect of catecholamine

release and then considered the combination of "HR decline" and "catecholamine release" as conflicting. Although we agree that an HR increase is an effect of situations with pure catecholamine release, it must be emphasized that a combination of "HR decline and catecholamine release" is also possible in some conditions, of which the most well-known is the Cushing reflex. As we supposed in the article, the HR decrease after energy drink consumption is possibly due to direct central stimulation of the vagus nerve by caffeine (2). A similar mechanism has been previously described for the Cushing reflex where concurrent hypertension (owing to sympathetic activation) and bradycardia (owing to the vagus nerve stimulation) are seen (3).

Given the known effects of smoking on sympathetic activation (4), as noted by the authors of the letter, we excluded all smokers from our study to avoid its possible confounding role on results. This was mentioned in the paper by excluding those with a history of "substance abuse." According to the valid definitions, including Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition (DSM-5) (5), tobacco consumption is an example of substance abuse.

Finally, as we discussed in the abovementioned article (1), factors such as different types of energy drinks and durations of BP monitoring after energy drink consumption are among the possible reasons underlying the conflicting results of different studies on hemodynamic effects of energy drinks. Thus, we agree with the authors of the letter that considering follow-up duration and amount of energy drinks are of great importance in comparing the results of different investigations on energy drinks.

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