Current studies about the energy drinks may not simulate the real life

To the Editor,

We have read the article of Hajsadeghi et al. (1), entitled "Effects of energy drinks on blood pressure, heart rate, and electrocardiographic parameters: An experimental study on healthy young adults" with great interest. Authors evaluated the effects of energy drink consumption on cardiovascular parameters in healthy young individuals. They reported a significant decline in heart rate and ST-T wave changes in subjects but no significant change in systolic and diastolic blood pressure, PR interval, QRS duration, and QTc interval following the consumption of energy drink.

Studies on the effects of energy drink on health have been increasing. Recently, a study investigated the acute effects of Red Bull energy drink on ventricular repolarization and could not find any significant alterations in ventricular repolarization by assessing the Tp-e interval and Tp-e/QT ratio (2). Hajsadeghi et al. (1) similarly reported that the QTc, an indirect representative of ventricular arrhythmia risk, did not alter significantly.

However, there are some conflicted data in the literature. Hajsadeghi et al. (1) reported that the heart rate significantly decreased and SBP and DBP did not change whereas Steinke et al. (3) reported that daily consumption of energy drink caused the HR, SBP, and DBP to rise not only on the 1st day but also on the 7th day. The main difference in those studies were the

volumes of energy drinks given to the participants; 250 mL in the study by Hajsadeghi et al. (1) vs. 500 mL in the study by Steinke et al. (3) We suggest that energy drinks may pose a dose-related risk when consumed excessively. Ammar et al. (4) had reported that caffeine-naïve subjects suffered persistent elevations of SBP and DBP after a single shot, and they recommended that longer period of caffeine abstinence was required to evaluate the real effects of caffeinated energy drinks on hemodynamic variables (4). In addition, caffeine content of energy drinks found in the marketing widely ranges from 50 mg to 500 mg (5), but caffeine content of the energy drink preferred in the study by Hajsadeghi et al. (1) only was 80 mg and may not exert the hazardous effects of an energy drink with high caffeine and other stimulants and energetics. Moreover, the consumption of energy drinks during heavy alcohol drinking may increase the risk of caffeine overdose and alcohol toxicity particularly in children and teenagers (5). Alcohol-induced atrial fibrillation was closely associated with reduced vagal tone, increased serum levels of catecholamine, and electrolyte imbalance, and those effects may be more prominent when energy drinks and alcohol are consumed together (5). High caffeine content may worsen the clinical effects of binging alcohol and energy drinks together not only by triggering atrial arrhythmias but also by causing ventricular arrhythmias.

In our opinion, these studies with low-volume and low-dose caffeinated energy drinks may not clinically simulate the harmful effects of high volume of energy drinks and high dose of caffeine particularly when consumed with alcohol or illicit drugs. Effects of different volumes of energy drinks with different caffeine content should be evaluated in further studies.

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DOI:10.14744/AnatolJCardiol.2016.7106