(-)-Epigallocatechin-3-O-gallate (EGCG) attenuates the hemodynamics stimulated by caffeine through decrease of catecholamine release

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A human study of the effects of hemodynamics of caffeine and epigallocatechin-3-O-gallate (EGCG) was performed. Caffeine tablets (200 mg) were orally administered to healthy males aged 25 to 35 years 30 min after oral administration of EGCG tablets (100 and 200 mg). The increase in BP induced by caffeine was inhibited when co-administered with EGCG. We found that caffeine slightly decreased heart rate (HR). Although EGCG enhanced HR reduction, the effect was not significant. In addition, caffeine increased blood catecholamines levels, but EGCG inhibited the increase in noradrenaline, adrenaline and dopamine levels induced by caffeine. Whether EGCG decreases the elevated HR and systolic perfusion pressure, and ventricular contractility induced by adrenergic agonists in the isolated rat heart was investigated. The modified Krebs-Henseleit solution was perfused through a Langendorff apparatus to the isolated heart of rats. HR, systolic perfusion pressure, and developed maximal rates of contraction and relaxation were increased by epinephrine (EP) and isoproterenol (IP). In contrast, EGCG decreased the elevated HR, systolic perfusion pressure, and left ventricular pressure induced by EP and/or IP. In conclusion, EGCG could attenuate the hemodynamics stimulated by caffeine through decreasing catecholamines release.