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Effects of gender on ketamine-induced conditioned placed preference and urine metabonomics

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Abstract: Objective: The aim of this study was to examine whether or not there was a gender difference in CPP (conditioned placed preference) induced by ketamine and to further explore the effect of sex on metabolic responses to ketamine inducing in SD rats. Methods: We measured ketamine-induced conditioned place preference and ketamine-induced metabolic changes in urine by using ^{1}H nuclear magnetic resonance (NMR) coupled with principal component analysis (PCA), partial least squares (PLS) and orthogonal signal correction (OSC) analysis. Results: In the CPP experiment, ketamine served as a positive reinforcing agent in both male and female rats, but, in particularly, the preference score of female rats was significantly higher than that of male rats. Compared with male rats, the metabolic trajectory fluctuation of the female rats was relatively larger. At the same time, different metabolites (1, 3-dimethyluric acid, cysteine-S-sulfate, glyceraldehydes, glycine, ribitol, acetoacetic acid, creatine,