Abstract: In this study, we hypothesized that explosive puffed coffee with GABA and 5-HTP would be associated with minimization of caffeine effect on sleep behavior and behavioral patterns in drosophila model. Roasted coffee (RB), explosive puffed coffee at 0.75 MPa and 0.9 MPa (PB 7.5 and PB 9.0, respectively) or decaffeinated coffee (DeRB) were used for analysis of locomotor activity and behavioral patterns. In decreasing order, total chlorogenic acid (CQA) contents was PB 7.5> PB 9.0 > RB. PB showed the high level of GABA and 5-HTP contents compared with RB in sleep-wake behavior of Drosophila. RB and PB (PB 7.5 and PB 9.0) were not significantly different in activity count at night and day comparing with normal. Sleep bouts of normal, PB and DeRB showed significantly difference to caffeine and RB in fly (p<0.05). Caffeine and RB group displayed better climbing ability by reaching over 6 cm average height. On the contrary, the average height that the normal, PB 7.5 and DeRB group reached was less than 4 cm. Normal and DeRB group showed similar behavior patterns in total distance, velocity, moving, not moving and meander. However, PB 7.5 group showed a slightly difference patterns in not moving and meander compared with normal and DeRB group. Explosive puffed coffee showed the suppression to stimulating effect of caffeine through the above results because increase of 5-HTP and GABA contents through explosive puffing process at 0.75 MPa. Further studies shall be required to investigate the underlying mechanism of the behavioral change patterns of explosive puffed with or without caffeine in animal models.

Keywords: GABA, 5-HTP, puffed coffee, drosophila, behavior patterns.