Inhibition of restraint-induced neuroendocrine and serotonergic responses by buspirone in rats

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Abstract:
The effects of buspirone (0.5 mg/kg) on the neuroendocrine and serotonergic responses to stress were monitored in rats. Exposure to 2-h of restraint stress increased circulating levels of corticosterone, noradrenaline and glucose. The metabolism of 5-hydroxytryptamine (5-HT; serotonin) increased in the brain. Prior administration of buspirone did not alter levels of corticosterone, noradrenaline and glucose in unrestrained rats, but inhibited stress-induced increase in the activity of hypothalamic-pituitary-adrenal (HPA) axis and circulating levels of glucose. Restraint-induced rise in brain 5-HT and 5-hydroxyindole-acetic acid (5-HIAA) was also attenuated by buspirone. Unrestrained animals injected with buspirone also exhibited a decrease in brain 5-HIAA concentration. The findings are discussed in the context of the role of somatodendritic 5-HT₁A receptors in responses to stress.

Key words:
stress, buspirone, serotonin, HPA axis, somatodendritic 5-HT₁A receptor