

Introduction: Adrenaline, cortisol, glucagon, and growth hormones are involved in the stress response. Long-term stress results in altered blood concentrations of these hormones leading to altered immune response and metabolism. The outcome of Buddhist meditation on these hormones have not been studied in one cohort. This study assesses the hormone concentrations in experienced meditators and compare them with an age, gender and education level matched non-meditating group.

Methods: This is a cross sectional case-controlled study and ethical clearance was obtained from the ERC, Faculty of Medicine, Colombo. Adrenaline, cortisol, glucagon, and growth hormone concentration in blood of long-term, experienced healthy meditators (n=18), recruited from Buddhist meditation centers, using a validated interview, and age, gender, BMI and educational / occupational level matched healthy control subjects (n=18) who had never practiced meditation, were determined using commercially available ELISA kits. Concentrations of adrenaline, cortisol, glucagon and growth hormone of meditators and controls were compared using Mann-Whitney U test and independent samples t-test.

Results: The mean age of the meditator group was 42.77 ± 9.51 and the control group was 42.54 ± 10.43 years and 67% were males. The mean duration of the meditation practice was 6.46 ± 2.89 years. In the meditator group, the cortisol (123.8 ± 4.12 ng/ml) (Mean $\pm$ SEM) concentration was significantly lower compared to the control group who had a cortisol concentration of (148.7 ± 4.74 ng/ml; $p < 0.001$). Adrenaline (37.4 ± 2.82 pg/ml) and glucagon concentrations (96.5 ± 4.33 pg/ml) were lower but not significant compared to adrenaline (46.6 ± 3.72 pg/ml; $p = 0.058$), and glucagon (109.6 ± 5.56 pg/ml; $p = 0.071$) levels in the control group. Growth hormone level (8.4 ± 1.37 ng/ml) was higher in the meditator group but not significant compared to growth hormone level in the control group (4.3 ± 0.90 ng/ml; $p = 0.076$).

Conclusion: These findings suggest that meditation may have the potential to positively alter the concentrations of the stress hormones. Further studies on the effect of meditation on stress hormones and other external stressors are recommended.