Suppression of Neurokinin B With Hormone Antagonists

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Excessive placental secretion of neurokinin B (NKB) is implicated in pre-eclampsia, a disorder associated with maternal health complications. Hormone antagonists are substances that regulate hormones by inhibiting the endocrine glands or hormone biosynthesis. This research focused on evaluating the efficacy of different NKB antagonists by measuring the pH of scintillation vials incubated with estrogen sub-types to determine the potential of hormonal modulation of placental endocrinology. The alternate hypothesis was that the NKB levels after the introduction of Estradiol would be significantly lower than the NKB levels after the introduction of Estrone and Estriol. 10 control vials and 3 groups of 10 vials with one estrogen sub-type each (Estrone, Estradiol, or Estriol) were inoculated with a 23.5 ng/L concentration of NKB. The pH values of all vials were evaluated during the 1-week incubation period to determine the rate of NKB suppression. After the 1-week incubation period, the changes in the pH values of the vials inoculated with Estrone and Estradiol were significantly different from the changes of the other experimental groups ($p<0.0001$). Lower estrogen levels are correlated with high NKB levels and high pH levels. The introduction of estrogen lowers NKB levels, and thus, pH levels. The decrease in pH in the vials treated with estrone and estradiol may indicate NKB suppression. Both estrone and estradiol offer a potential hormonal method of NKB suppression, although the suppressing effect of estrone was initiated more immediately and lasted longer, making estrone the more promising candidate. Application of the principles of hormone antagonists to inhibit NKB function could potentially reduce the severity or prevalence of pre-eclampsia in maternal populations.

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