

# Ashley Bolden, Biology

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## **Estrogenic effects of polyphenols on ovariectomized rats**

In this study we tested the estrogenic potential of certain polyphenols administered in the diet to ovariectomized female Sprague Dawley rats. One week after ovariectomy, five week old rats were placed on one of the following treatments: epigallocatechin gallate (EGCG), resveratrol, genistein, daidzein (all at 250 mg/kg AIN- 93M diet), estradiol benzoate (EB) (at 50 ug/kg diet), or a control diet (AIN-93M). After 14 days of dietary treatment, the rats were sacrificed and their uteri were dissected for analysis by uterine to body weight ratios and immunoblotting. The average body weights for the treatment groups were statistically consistent except for estradiol benzoate, which had a slight but significantly decreased body weight compared to the other treatments. The data for uterine to body weight ratios showed that the sham (ovary-intact), genistein, and EB groups were significantly increased compared to the ovariectomized control group. Immuno-blot analysis in the uterus for estrogen receptor alpha indicated a decrease in the protein expression in the sham and the EB groups, while the resveratrol, EGCG, and daidzein groups resulted in an increase in ER-alpha expression with respect to the control group. Progesterone receptor-b expression in the uterus was significantly increased following EB, daidzein, or EGCG treatments. This data suggests that estradiol benzoate and, to a lesser extent, genistein have estrogenic effects in the uterus and that the polyphenols EGCG, resveratrol, and daidzein are able to affect protein expressions via non-estrogen receptor mechanisms.