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Some alternative cancer therapies recommend the use of soy to suppress cancer growth. It has been suggested that isoflavones in soy are the substance that suppress cancer growth because isoflavones structurally resemble estradiol, which has been observed to stimulate cell proliferation. Thus, our experiment is designed to investigate this claim. We will compare the effect of varying concentrations of soy on the growth of two human breast cancer cell lines MCF-7 and MDA-MB-231. We will also examine the effects of diadzein on these cells.

**Problem**:

Does soy have an adverse effect on breast cancer cell proliferation? If so, is diadzein, an isoflavone found in soy, responsible for this effect? Do soy and isoflavones inhibit cell proliferation by competitively inhibiting estradiol from binding to the estrogen receptors?

**Hypothesis:**

If soy and diadzein have an adverse effect on human breast cancer cell proliferation, then cells treated with soy will have lower levels of proliferation than the control. Furthermore, if isoflavones such as diadzein are the active ingredient in soy, then the similar results will be observed in cells treated with diadzein. Finally, if soy and isoflavones inhibit cancer growth by competing with estradiol for estrogen receptors, then soy and isoflavones will have no effect on cell proliferation in estrogen-receptor negative MDA-MB-231 cells.