

Estrogenic Activity of *Eucommia ulmoides*, *Lycium chinese*, *Foeniculum vulgare*, and *Schizandra chinensis* in Vitro

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There is an increasing trend in the use of complementary and alternative therapies to treat or prevent hormonally dependent pathologies. We examined the estrogenic activity of *Eucommia ulmoides*, *Lycium chinese*, *Foeniculum vulgare*, and *Schizandra chinensis*. Two *in vitro* systems, competitive binding assay to estrogen receptor (ER) and MCF-7 cell proliferation were selected to evaluate the estrogenic effects. When assessed their estrogen receptor (ER- α and ER- β) binding capacity with the use of fluorescence-labeled compounds, the highest ER-binding resources that are examined in this study were *Schizandra chinensis* and *Eucommia ulmoides*, respectively. The estrogenic activity of these was further investigated using MCF-7 cell proliferation assay. In this system, ethanol extracts of *Eucommia ulmoides*, *Lycium chinese*, *Foeniculum vulgare*, and *Schizandra chinensis* were capable of mimicking natural estrogens and thereby induced cell proliferation. Among the investigated resources, *Eucommia ulmoides* elicited the significant cell proliferation ($p < 0.05$), whereas remaining resources were weak estrogenic activity. Several of these natural products demonstrate weak steroid hormone activity.

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