

Hormonal Activity of Plants:

- 144 women with breast cancer and 144 women without breast cancer (age, dietary, lifestyle, etc... matched)
 - Collected blood and urine samples from these women and looked at the urinary output of estrogen like compounds in these women: Lignans, enterodiol, enterolactones, isoflavones phytoestrogens, equol, diazepam, genistein, matairesinol
 - Increase excretion (which was correlated with ↑ intake) of diazepam, equol and enterolactone was associated with a significant reduction in breast cancer risk²²
 - Diazepam is found in Brassica vegetables
 - Equol is a breakdown product of soya and maybe green tea
 - Dairy is also associated with high output of equol
 - ↑ Equol intake and ↑ excretion has also been correlated with ↓ prostate cancer incidence
 - Enterolactone is found in soy
 - Lignans are found in berries, flax seeds, grains, fruits, veggies

Binds to E2 receptor binding sites (compete with E2 binding sites):	<ul style="list-style-type: none"> ○ Soy ○ Glycyrrhiza glabra (both as herb and as DGL herb, NOT glycyrrhizin, glycyrrhithinic acid) ○ Trifolia pratensis ○ Thymus vulgaris ○ Curcumin longa - in MCF-7 (estrogen+) breast cancer cell lines ○ Humulus lupulus ○ Verbena officinalis
Lowering E2 levels:	<ul style="list-style-type: none"> ○ Angelica sinensis ○ Soy
Positive estrogen effect (↑ E2 levels):	<ul style="list-style-type: none"> ○ Humulus lupulus ○ Thymus vulgaris ○ Curcuma longa ○ Oreganum vulgare ○ Angelica sinensis and Panax ginseng - MCF-7 breast cancer but not via E2 effect
Binds to progesterone binding sites (progesterone induction of ALP was studied):	<ul style="list-style-type: none"> ○ Oreganum vulgare ○ Verbena officinalis ○ Curcuma longa ○ Thymus vulgaris
Progesterone Antagonists	<ul style="list-style-type: none"> ○ Sanguinaria canadensis ○ Mandragora spp. (mandrake) ○ Mentha pulegium (pennyroyal) ○ Viscum album ○ Trifolium pratensis ○ Turnera diffusa ○ Glycyrrhiza glabra ○ Hydrastis canadensis ○ Myristica fragrans (nutmeg)
Looked at estrogen + and - breast cancer cell lines: MCF-7 (a very aggressive breast cancer that requires estrogen to proliferate). The following herbs inhibited the growth of the breast cancer cell line:	<ul style="list-style-type: none"> ○ Mandragora spp. ○ Sanguinaria canadensis ○ Juniperus spp. ○ Viscum album ○ Curcuma longa
Estrogen negative tumors are generally considered to have a poorer prognosis:	<p>Viscum album and Curcumin^{34 35} are both considered to be helpful for estrogen negative and estrogen positive cancer cell lines. The estrogen negative cell line, MDA-MB-231, was used in studies.</p>
Other Breast Cancer Data:	Angelica sinensis: Looked at in MCF7 model