Hormonal Support

• In this section, we will review herbs and nutrition that may be beneficial for hormonal support.
Phytoestrogens

- Phytoestrogens are plants (phyto) that contain estrogen-like compounds.
- They have a weak estrogenic effect
- By competitive inhibition (with “real” estrogen), they also have an anti-estrogenic effect
Black Cohosh

- Cimicifuga is useful for dysmenorrhea, delayed or irregular menses, PMS, and hot flashes
- Contraindications
  - avoid in first trimester unless threatened miscarriage or premature
  - large doses may cause vertigo, impaired vision, nausea/vomiting, headache
Formononetin

- Cimicifuga racemosa (Black Cohosh) is a phytoestrogen that contains formononetin, which binds to estrogen receptors inducing an estrogen-like activity in the body.
- Recent research shows that Cimicifuga does not effect estrogen, progesterone, FSH or LH levels.
- It may be a selective estrogen receptor modifier.
Black Cohosh Efficacy

• There are many studies and articles on the use of Black cohosh for menopause and hot flashes
• Some are negative and some are positive.
• The most promising results use the standardized isopropanolic extract (Remifemin)
• Negative studies usually show an effect with both placebo and Black Cohosh
Black Cohosh Safety

• Adverse symptoms have been rare (5.4%), mild and reversible.
• Most of them included gastrointestinal upsets, rashes, headaches, dizziness and mastalgia.
• Single cases of serious adverse events, including acute hepatocellular (liver) damage, have been reported, but without a clear causality relationship.
• In 2008, the Dietary Supplement Information Expert Committee determined that black cohosh products should be labeled to include a cautionary statement.
Red Clover

• Red clover has been a valued medicine since ancient times and was particularly valued for treating respiratory problems, colds, flues and infections in the 19th century.

• Red clover is recognized as a detoxification herb or "blood cleanser".
Red Clover

• *Trifolium pratense* (Red clover) contains isoflavonoids, which have a high affinity to estrogen receptor alpha and beta, progesterone receptor and androgen receptor.

• Red clover contains phytoestrogens: genistein, daidzein, formononetin and biochanin-A
Dong Quai

- Angelica sinensis (Dong quai) is one of the most popular plants in Chinese medicine, and is used primarily for health conditions in women.
- Dong Quai has been called "female ginseng"
- Dong Quai balances estrogen activity and tonifies the uterus.
- It is useful for irregular menses, amenorrhea, dysmenorrhea, menopause, and hot flashes
Dong Quai

- Angelica contains coumarins, which thin the blood; and ferulic acid, which inhibits platelet aggregation, and stimulates B and T cells.

- Cautions:
  - Dong quai may worsen diarrhea
  - Dong quai contains photoreactive substances, avoid excess sun exposure
Vitex agnus castus

- Vitex agnus castus (Chaste tree) helps regulate hormones
- Vitex is useful for hypermenorrhea, oligomenorrhea, menorrhagia, dysmenorrhea, PMS, anovulation, infertility, and hyperprolactinemia
- Vitex must be taken over several months to show results
Vitex

- Vitex agnus castus (Chaste Tree) acts on the pituitary to increase LH production and inhibit FSH release, which stimulates progesterone secretion during the luteal phase and decreases prolactin levels.
Dioscorea villosa

- Dioscorea villosa (Wild yam) has been used for menstrual cramps and discomfort, rheumatoid arthritis, stomach cramps and pain from gallstones.
- Side effects include: nausea, vomiting, diarrhea and headache
Diosgenin

- Diosgenin is a phytosterol found in Wild Yam that is used to make progesterone
- Although the body doesn’t convert diosgenin into progesterone, it is a phytoprogesterone
Spearmint

- One study found that after treatment with spearmint teas, there was a significant decrease in free testosterone and increase in luteinizing hormone, follicle-stimulating hormone and estradiol.
- The study concluded that spearmint may be an alternative to anti-androgenic treatment for mild hirsutism.
Saw palmetto

• Saw palmetto (Serenoa repens) is useful for benign prostatic hypertrophy (BPH), infertility (in men) and erectile dysfunction
• Saw palmetto contains liposterics, which inhibit 5-alpha-reductase & 3-ketosteroid reductase
• 5-alpha-reductase is an enzyme that converts testosterone into dihydro-testosterone

Please review the next slide (bottom right).
Hormone Metabolism

Cholesterol
  └ cholesterol desmolase
    └ Pregnenolone → Progesterone → corticosterone → Aldosterone
        └ 17α hydroxy Pregnenolone.
            └ 17α hydroxy Progesterone → 11-deoxy cortisol → Cortisol
                └ 5α reductase
                    └ DHEA → Androstenedione ↔ Testosterone → Dihydro Testosterone
                        └ aromatase
                            └ Estrone ↔ 17-β Estradiol → Estriol
Zinc

- Zinc inhibits 5 alpha reductase
- Zinc is also a cofactor for alcohol metabolism
- RDA - 15 mg, Optimal - 30-50 mg a day
- Sources: oysters!
- Toxicity
  - high doses often cause stomach upset and nausea
  - long term usage can induce a copper deficiency
The Zinc Tally Test

Put 1 tsp. Liquid zinc in the mouth and hold it for 1 minute.

1. No specific taste is noticed, even after 10 seconds
2. A “dry”, “mineral”, or “fuzzy” taste is noticed after a few seconds.
3. A definite unpleasant taste is noticed immediately and intensifies.
4. A strong unpleasant taste is noted immediately. The subject grimaces.

Responses of 1 or 2 indicate the need for zinc.
Pygeum africanum

- Traditional African healers use Pygeum africanum (African plum) bark to treat bladder and urination disorders.
- It is particularly helpful for symptoms associated with benign prostatic hypertrophy (BPH).
- Positive research led to its common use in Europe for BPH.
- It is less commonly used in the United States where prescription drugs or the herb saw palmetto is more commonly used.
Beta-Sitosterol

• The most common phytosterols are beta-sitosterol, campesterol and stigmasterol.
• Several studies have shown that beta-sitosterol improves prostate function.
• A meta-analysis published in *Cochrane Database of Systematic Reviews* concluded that the evidence suggests non-glucosidic beta-sitosterols improve urinary symptoms and flow measures.
Licorice

• Glycyrrhiza glabra (Licorice) is used in many candies, although most use anise seed, which has a similar taste.
• The word licorice is derived from the Ancient Greek words for 'sweet root’.
• Glycyrrhizin, its active principle, is a sweetener more than 50 times as sweet as sucrose.
Licorice

• Licorice is commonly used for adrenal support
• Recent studies show that licorice may slow the breakdown of adrenal hormones
• Licorice is commonly found in hormonal support formulas
• Recall that the adrenal glands are a secondary producer of hormones.
• High blood pressure is the primary side effect of licorice.
Diindolylmethane

• DIM (Diindolylmethane) is a phytonutrient found in broccoli, cauliflower, cabbage and brussels sprouts.
• DIM boosts levels of good estrogens called 2-hydroxy estrogens and reduces levels of bad estrogens, which are 16-hydroxy and 4-hydroxy estrones.
• Both forms of bad estrogen are carcinogens
• Studies show that women with elevated levels of 16-hydroxy estrone have a high rate of breast cancer.
DIM

• One study on human breast cancer cells found that DIM blocked estrogen receptors without the presence of estradiol and even inhibited the growth of estrogen-dependent cancer cells.
Genistein and Daidzein

- Genistein and daidzein are a soy-derived phytoestrogens (isoflavones)
- Genistein has been shown to bind to the same receptor sites as estrogen, which helps to maintain normal menstrual cycles and menopausal transitions.
Ipriflavone

- Ipriflavone is a soy derived isoflavone, also called 7-isopropoxyisoflavone.
- It is a synthetic derivative of the plant isoflavone, genistein.
- Ipriflavone is found naturally in bee propolis.
Ipriflavone for Osteoporosis

- Ipriflavone may have a beneficial action on bone density.
- For many years, ipriflavone has been a prescription medication (Osteofix 200) for osteoporosis in Italy.
- Lymphocytopenia (decreased white blood cells) is listed as a contraindication on the Osteofix 200 label.
Calcium D-glucarate

- Calcium D-glucarate is the calcium salt of D-glucaric acid, a natural substance found in many fruits and vegetables.
- One of the key ways the body eliminates hormones is by attaching glucuronic acid to them in the liver and then excreting this complex in bile.
Calcium D-glucarate

- Calcium D-glucarate has been shown to inhibit beta-glucuronidase, an enzyme that breaks the bond between toxic chemicals and glucuronic acid.
- Elevated beta-glucuronidase activity is associated with increased risk for various cancers, particularly hormone-dependent cancers like breast, prostate, and colon cancers.
Vitamin E

• Vitamin E is useful for dysmenorrhea, menopause, PMS, and fibrocystic breast disease
• Natural forms include alpha, beta, gamma and delta tocopherol
• DL-alpha tocopherol is the synthetic form
Detoxification

• Recall that all of the sex hormones are produced from cholesterol via the P450 enzyme system
• P450 is part of phase 1 detoxification (oxidation, reduction and degradation), which detoxifies alcohol, carbon tetrachloride, barbiturates, dioxin, and paint fumes
Detoxification

• Cytochrome P450 competes with 5 alpha reductase in endoplasmic reticulum

• Recall that 5 alpha reductase converts testosterone into DHT
Detoxification

• Hormonal problems sometimes coexist with hepatic detoxification issues
• Consider detoxification in cases that do not respond to supplementation, or if there is a history of headaches, sensitivity to coffee and/or gas fumes.
Summary

- **Phytoestrogens**
  - Cimicifuga racemosa (Black Cohosh)
  - Trifolium pratense (Red clover)
  - Genistein and Daidzein (Soy)
  - Beta-Sitosterol

- **Phytoprogesterones**
  - Dioscorea villosa (Wild yam)

- **5-alpha reductase inhibitors**
  - Zinc and Serenoa repens (Saw palmetto)

- **Beta-glucuronidase inhibitors**
  - Calcium D-glucarate
Summary, continued

• Herbs
  – Vitex agnus castus (Chaste tree berry)
  – Pygeum africanum
  – Spearmint

• Vitamins
  – Vitamin E

• Nutrition
  – Ipriflavone for bone density
Summary, continued

- 5-alpha-reductase converts testosterone into dihydro-testosterone (DHT)
- Zinc and Saw palmetto inhibit 5 alpha reductase
- Zinc status can be tested by drinking it (The Zinc Tally Test)
Summary, continued

• Hormones and toxic elements are cleared from the body in the lever by a process called detoxification
• It is typical for young (and old) adults to party excessively causing toxins to build up
• Detoxification may be indicated in cases of hormonal imbalance.