



# HORMONE BALANCE



Mom was right, eat your broccoli 🥦

## CRUCIFEROUS VEGETABLES

There are many natural plant compounds which positively affect hormone balance in relation to cancer risk, but here we are focusing on the Brassica genus

### WHAT ARE CRUCIFEROUS VEGETABLES?



- CABBAGE
- BROCCOLI
- BROCCOLI SPROUTS
- KALE
- CAULIFLOWER
- TURNIP
- KOHLRABI
- COLLARD GREENS
- MUSTARD GREENS
- RUTABAGA

- ARUGULA
- BOK CHOY
- BEET GREENS
- TURNIP GREENS
- WATER CRESS
- BRUSSELS SPROUTS
- SWISS CHARD
- RADISH
- HORSE RADISH
- RADICCHIO



### WHAT'S SO SPECIAL ABOUT CRUCIFEROUS VEGETABLES?

Cruciferous vegetables have been intensely studied\*\* in recent decades for their chemoprotective qualities across many cancer types, but particularly in hormone sensitive cancers like breast, prostate, cervical & endometrial, which often are or become resistant to traditional treatments.

### 2 MAIN BIOACTIVE COMPOUNDS: (there are plenty of others too!)



#### INDOLE-3-CARBINOL (I3C)

- I3C => potent bioactive phytochemical in cruciferous vegetables
- Amount of I3C varies per plant and is based on plant age, breed, storage & preparation
- I3C: acts as a **phytoestrogen** which increases "good" estrogen (2-hydroxysterone) while reducing production of estrogen linked to cancer (16-hydroxysterone) => *hormone balance!*
- I3C: induces apoptosis (cell death), inhibits cancer cell growth, proliferation & metastasis
- I3C: works with chemotherapy to overcome drug resistance & sensitize tumors without any toxic side effects
- I3C: also shown to enhance efficacy of chemotherapy when used synergistically
- Studied with widely used chemotherapies such as Tamoxifen, Doxorubicin as well as Cisplatin
- **Caution:** women with certain genetic SNPs are less responsive to I3C & their levels of 2:16 hydroxysterone should be monitored
- **ALWAYS** check with a qualified practitioner before undertaking any new dietary or supplement regimen, particularly if you are taking any Rx



#### DIINDOLYLMETHANE (DIM)

- I3C is converted to DIM in the stomach
- Conversion of I3C to DIM **requires** adequate amounts of **stomach acid (HCl)** \*\*may be inhibited by acid blockers\*\*
- DIM inhibits angiogenesis, cancer cell proliferation & cancer cell growth
- Promotes healthy detoxification, **beneficial estrogen metabolism** & hormone synthesis, induces apoptosis
- **Enhanced effects of radiation therapy** in breast cancer cells
- **Improves efficacy of traditional chemotherapies** such as Paclitaxel, Gemcitabine, Taxotere, Herceptin
- *Despite numerous studies confirming the beneficial actions of DIM on cancer cells, a 2014 study found that a low concentration of DIM stimulated cell growth 2 breast cancer cell lines in the absence of a specific form of estrogen (estradiol). Clinical trials continue to generate new data regarding DIM as you read this.*
- **ALWAYS** check with a qualified practitioner before undertaking any new dietary or supplement regimen, particularly if you are taking any Rx

\*\* studies mainly performed on cell cultures & mice w/ increasing human studies since 2000 and ongoing clinica trials



#### REMEMBER:

Fresh, high quality, organic food is always the best source of nutrients, as each plant contains countless other bioactive compounds that work synergistically toward optimal cellular function.

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