

# *Medicinal plants, herbs and spices*



## *Introduction*

### MEDICINAL PLANTS COLLECTION. PART 50



Borage



Barbados Nut



Redcurrant



Guarana



White willow



Black nightshade



# *I. Medicinal Plants*

- ◆ 1. Approximately 25% of today's prescription drugs come from plant extracts
- ◆ 2. Only about 15% of the known plant species have been screened for medicinal purposes.
- ◆ 3. Most medicinal plants come from the Tropics.



## *Medicinal Plants in the Tropics*

- ◆ Most medicinal plants have been identified by the indigenous people by trial and error.
- ◆ 50% of the 250,000 plant species are from the Tropics.
- ◆ At least 10,000 species in the Tropics have not yet been identified.

# *NCI - Plant Collection Program (1986-1991)*

- ◆ 10,000 plant samples collected for screening against HIV and cancer
- ◆ 2500 species and 200 families
- ◆ Of the 3000 extracts analyzed, 170 contained agents active against HIV
- ◆ 776 fully identified species, 106 had active agents. 62 were previously known as medicinal plants. 44 were entirely new.



Family & Botanical Name	Synonym	Common Names (Spanish/English)	Part Used	Mode of Prep.	Ethno-medicinal Uses	Ref.
Acanthaceae <i>Justicia spicigera</i> Schult.	<i>Jacobina spicigera</i> Schult.	Muitle, muicle Mexican honeysuckle	Aerial part	Decoction	Kidney infection Stimulant Dysenteric Menstruation Uterine cancer Diabetes	[9,10] [11,13] [14,15]
Asteraceae <i>Tagetes lucida</i> Cav.	<i>T. florida</i> Sweet <i>T. schiedeana</i> Less.	Pericón, Marigold	Aerial part	Decoction	Diarrhea Dysentery Rheumatism Vomiting Asthma Varicose veins Colds	[6,11] [13] [14]
Cucurbit-aceae <i>Cucurbita ficifolia</i> Bouché		Chilacayote, Fingleaf gourd	Mature fruit	Juice	Wounds Hemorrhoids Fever Diabetes	[7,8] [13]
Cucurb- iataceae <i>Ibervillea sonora</i> Greene	<i>Maxim- owiczia sonora</i> S. Wats	Wareke	Root	Decoction	Skin ailment Wound treatment Diabetes mellitus Rheumatism Antiinflammatory Analgesic Hypoglycemic Cancer healing	[12] [13] [16] [17]

# *Medicinal Plants*

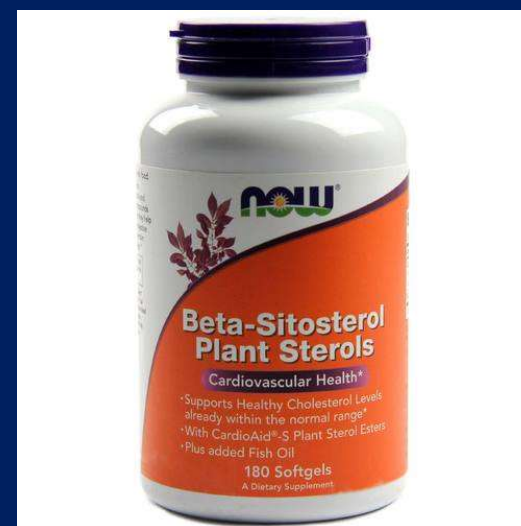
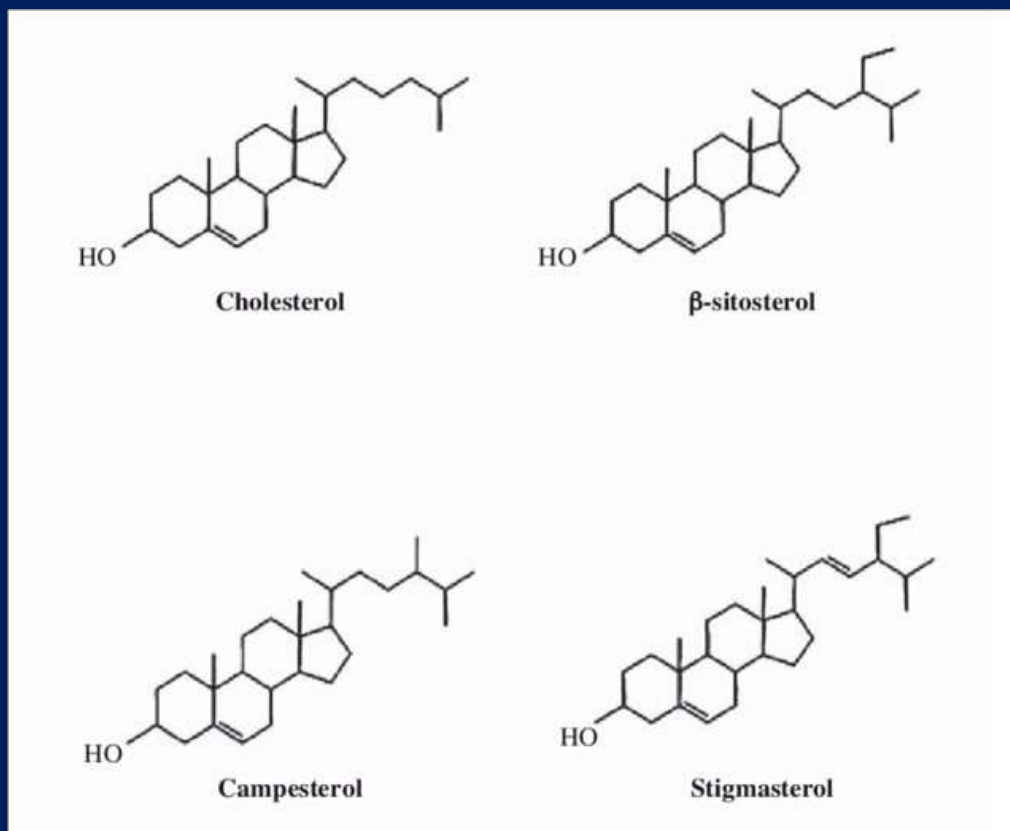
Contain powerful ingredients.

Only 15% of estimated plant species on earth have been investigated for possible Medicinal uses.

The world Health organization estimates that 80% of the earth population today depends on plants to treat common ailments.

Traditional Healers are good resources for scientific based research.

# *1. Medicinal Plants (continued)*



The most significant medicinal plants used for prescription drugs contain **steroids** or **alkaloids**

# *1. Medicinal Plants (continued)*



There are a host of non-prescription plant remedies which have medicinal uses. These are often referred to as “herbal medicines”.



# *Ginkgo (Ginkgo biloba)*

- ◆ Complex of phytomedicinals from the leaves
- ◆ Improves blood flow
- ◆ Improves memory in older people
- ◆ Effective free-radical scavenger
- ◆ Side effects are restlessness, diarrhea, nausea and vomiting



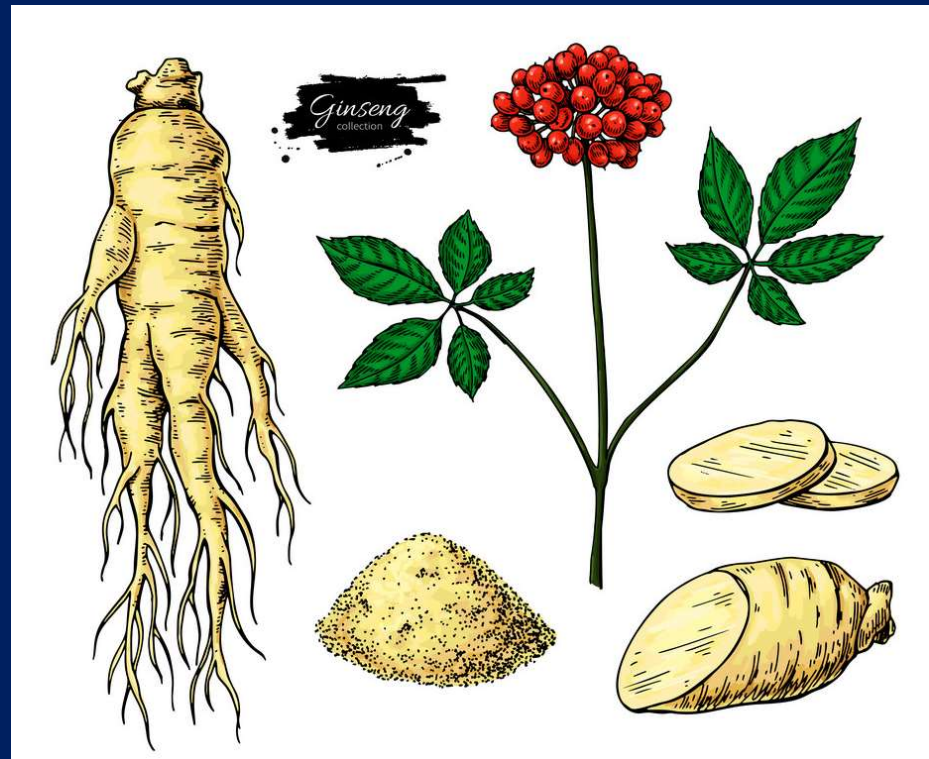
# *Echinacea (Echinacea species)*

- ◆ Extracts from shoot, root and rhizome
- ◆ Acts as immunostimulant
- ◆ Speeds up cycle of cold virus and flus
- ◆ NOT preventative.



# *Ginseng (Panax ginseng, P. quinquefolium, Elutherococcus senticosus)*

- ◆ Mixture of compounds from root
- ◆ Traditional Chinese medicine for 5000 years
- ◆ Increases stress tolerance
- ◆ Speeds up metabolism
- ◆ Anti-carcinogenic
- ◆ No known side-effects



# *Chamomile (Matricaria recutita and Chamaemelum nobile)*

- ◆ Mixture of terpenoids, coumarins, and flavonoids from dried flower heads
- ◆ Soothes stomach-aches
- ◆ Anti-inflammatory, anti-spasmodic and anti-bacterial actions
- ◆ Mild sedative



# *Feverfew (Tanacetum parthenium)*

- ◆ Sesquiterpenoid lactones from leaves
- ◆ Used for 2000 years
- ◆ Effective head-ache treatment, especially migraines





## *Garlic (Allium sativum) & Onion (Allium cepa)*

- ◆ Organo-sulfur compounds from leaves
- ◆ Anti-carcinogenic and anti-microbial
- ◆ Anti-atherosclerosis and anti-hypertensive
- ◆ Toxic in high amounts



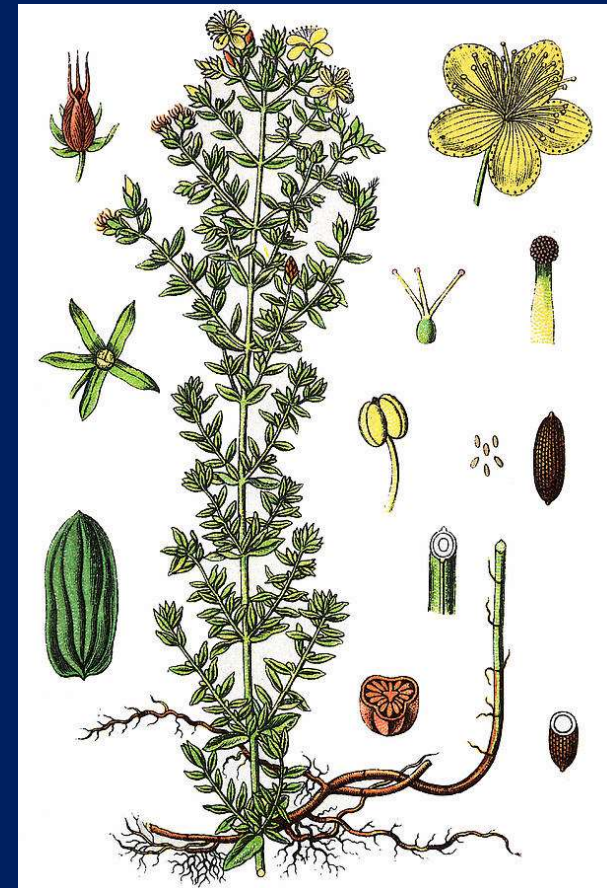
# *Milk Thistle (Silybum marianum)*

- ◆ Complex of flavolignans from seeds
- ◆ Protects liver against toxins, particularly against poison from *Amanitas phalloides*
- ◆ Helps against hepatitis and cirrhosis of the liver



# *St. John's Wort (Hypericum perforatum)*

- ◆ extract from leaves
- ◆ Effective for depression and sleeplessness
- ◆ anti-retroviral activities (AIDS)
- ◆ Side effects include photosensitivity and dermatitis



# *Saw Palmetto (Serenoa repens)*

- ◆ from fruits
- ◆ Increases frequency of urination
- ◆ Treatment for prostate cancer
- ◆ Protects against edema (water retention) and inflammation





## *English Hawthorn (Crataegus laevigata)*

- ◆ Leaves, flowers and fruit can be used
- ◆ Increases dilation of blood vessels
- ◆ Used for mild forms of heart disease





# *Green Tea (Camellia sinensis)*

- ♦ Polyphenols from leaves
- ♦ anti-cancer inhibiting tumor initiation and cell proliferation
- ♦ anti-oxidant



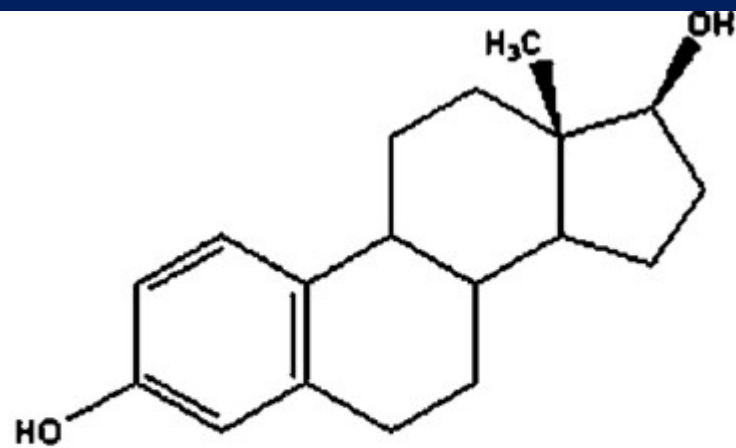
# *Wine Grape (Vitis vinifera)*

- ◆ Contains over 50 different flavonoid phenolics including resveratrol and catechins
- ◆ Reduces heart disease by inhibiting platelet aggregation, lowering LDL (low density lipoproteins) and acting as antioxidants

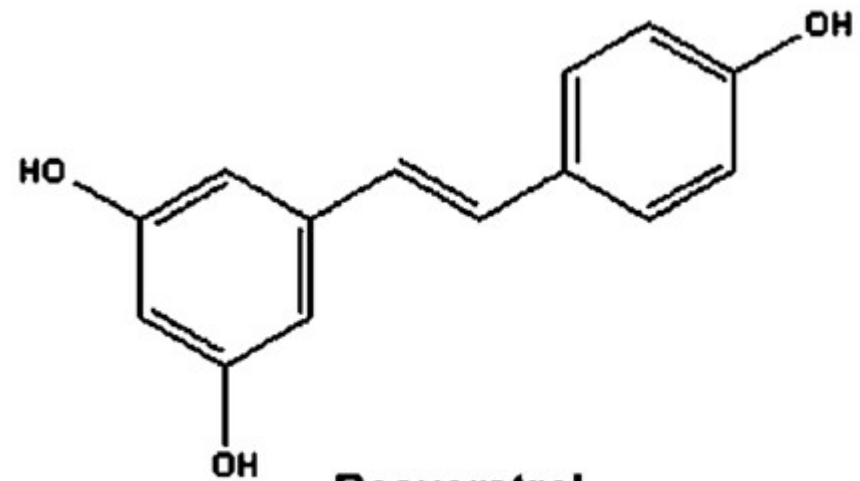


## *White Wine vs. Red Wine Phenolics*

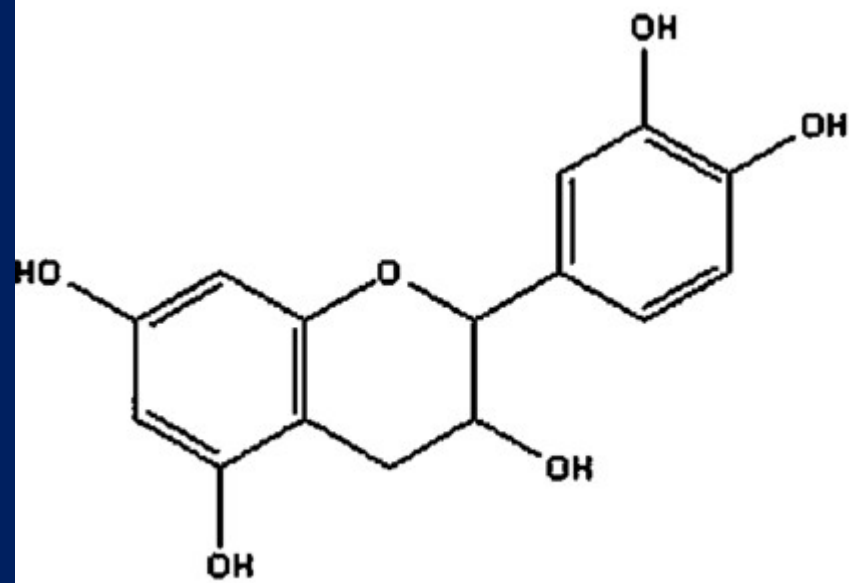
(mg/L)	White Wine	Red Wine
Total Phenolics	200-300	1500-3000
Hydroxycinnamates	50-200	25-150
Anthocyanins	0	600-1000
Catechins	10-50	60-150
Flavonols	Negligible	25-250



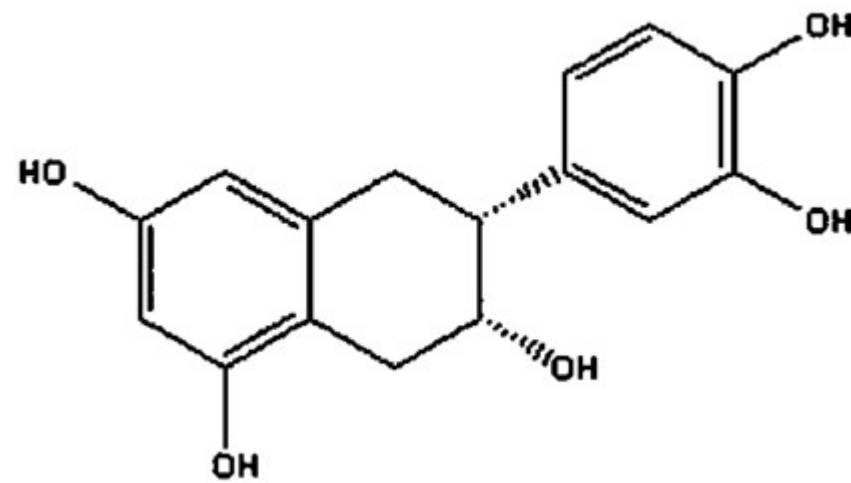
**Estrogen**



**Resveratrol**



**Catechin**



**Quercetin**

# *Licorice (Glycyrrhiza spp.)*

- ◆ Phenolic compounds from the root or rhizome
- ◆ anti-oxidant
- ◆ anti-tumor
- ◆ anti-inflammatory





# *Ginger (Zingiber officinale)*

- ◆ from the rhizome
- ◆ Over 12 compounds with anti-oxidant activities greater than vitamin E
- ◆ anti-tumor
- ◆ anti-emetic (inhibits vomiting)



# *Soybeans (Glycine max)*

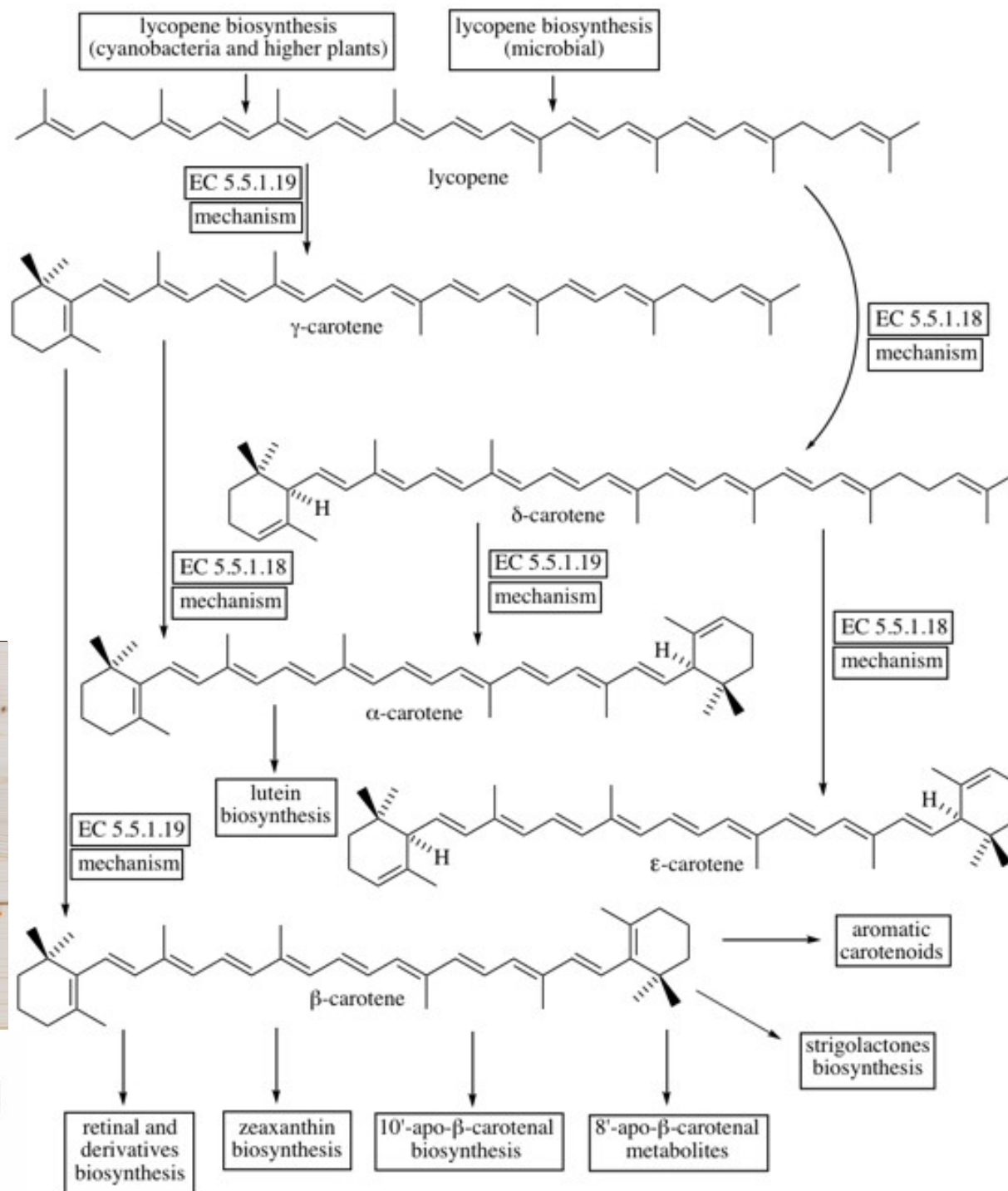
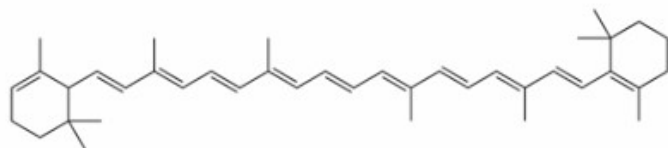
- ◆ Contains phytoestrogens like isoflavones
- ◆ Reduces health risks associated with menopause: osteoporosis and heart disease in women
- ◆ Reduces prostate, colon and breast cancer



# *Vegetables*

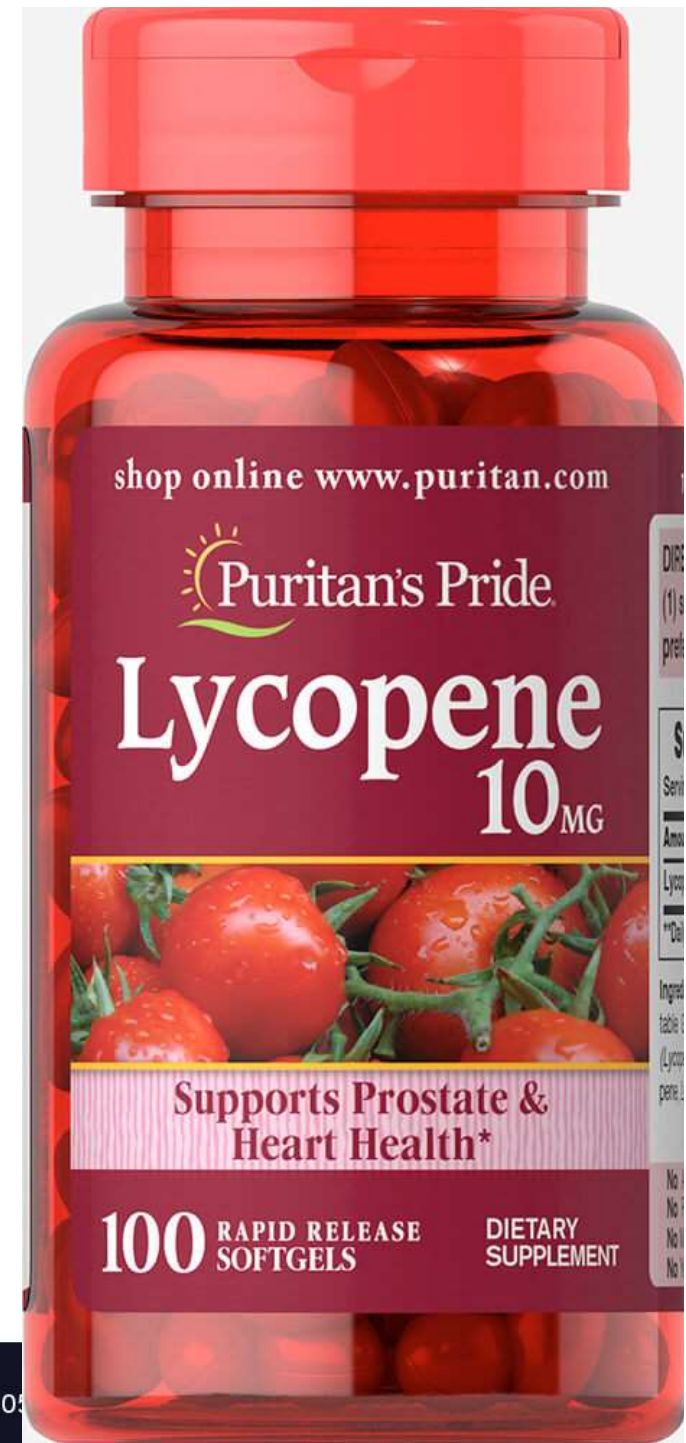
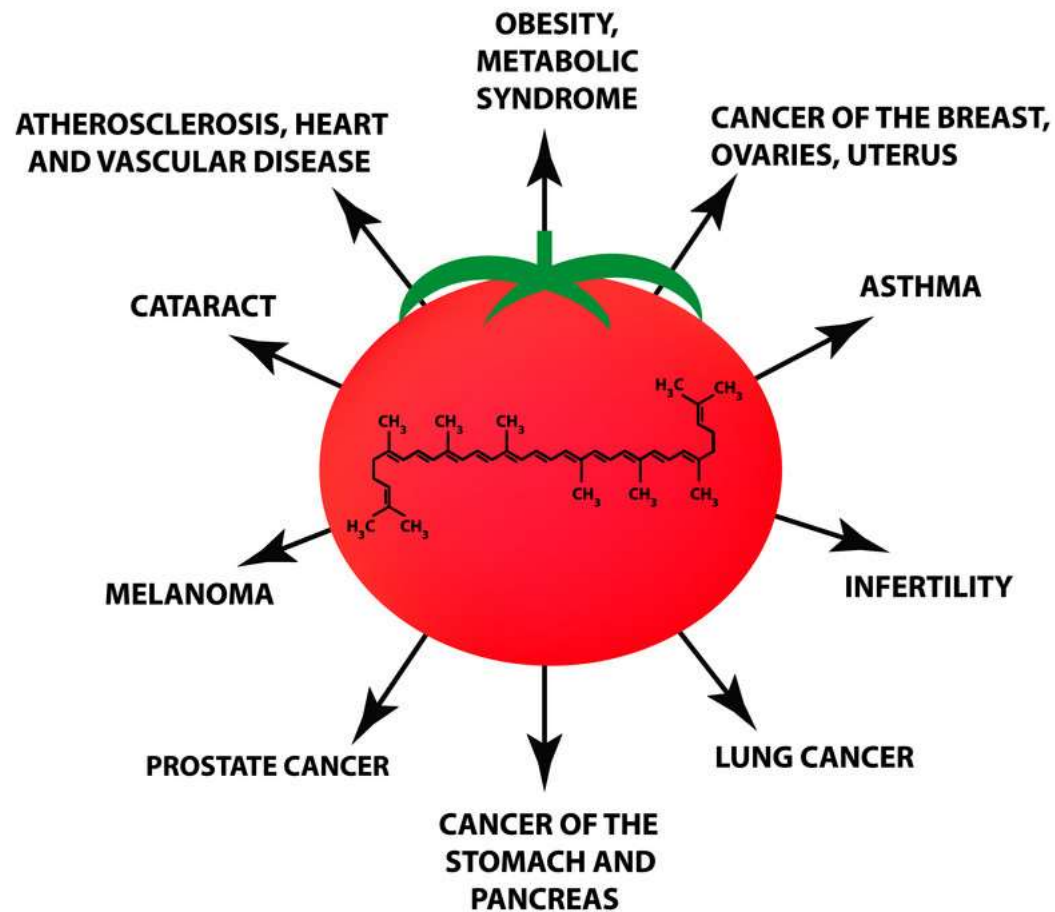
- ◆ Vitamin A, C and E
- ◆ anti-oxidant
- ◆ anti-cancer



C/C=C(C)/C=C(C)/C=C(C)/C=C(C)/C=C(C)/C=C(C)/C=C(C)/C=C(C)/C=C(C)/C=C(C)C



# LYCOPENE





## *Take Home Message*

- ◆ Many plants with medicinal qualities
- ◆ Often a synergistic effect of different compounds
- ◆ No magic bullet

*Thank you for your attention!*



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