

Some like it **HOT!**

Nutritional updates



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# Chile

- Introduction of chile by Don Juan Onate to New Mexico in 1598
- Most countries grow some form of chile
- Use of chile worldwide
  - **2<sup>nd</sup> only to salt**
- Chile Research at NMSU
  - **Over 100 years of continued research**



# Vitamin C

- Varies with the pepper variety (3/4 cup)
  - Jalapeno 20 mg
  - Fresh green chile 143 mg
  - Fresh red chile 243 mg
  - Green roasted chile 33 mg
  - Californian, dried 25 mg



# Vitamin C

- The amount in  $\frac{3}{4}$  cup fresh green = 143 mg
- The amount in  $\frac{3}{4}$  cup fresh red = 243 mg
- The amount in  $\frac{3}{4}$  cup orange juice = 78 mg
- RDA for vitamin C = 75-100 mg
- Increases as the chile ripens



# beta Carotene – provitamin A

- Amount increase as the chile ripens
- Synthesis continues after chile is picked
  - **Green chile 1.4 micrograms**
  - **Red chile 66 micrograms**



# Antioxidants (vitamins A, C, E)


- Anti – against
- Oxidant – oxygen
- A substance that protects our body tissues from the damaging effects of oxygen



# Increase of Antioxidants

Preparing the pods for drying changes the amount of antioxidants in the pod

Cutting the pods in half and drying them at 158°F for 6 hours – 3 times more antioxidants than traditional drying methods.



# Phytochemicals = Phytonutrients

- Phyto – plant
- Not essential – 3,000 identified
- Fruits and Vegetables
- Amount of phytonutrients in chile increases as they ripen
- “Spark” body processes that may fight or reduce risk for some diseases




# Do phytochemicals have RDAs?

- Phytochemical supplements?
  - They will only provide selected components in a concentrated form but not all of the compounds that occur naturally in the foods



# Phytochemicals

- Phytochemicals interact with each other in the body producing a synergistic effect
- Phytochemicals interact with macronutrients and vitamins and minerals producing an enhanced effect
- Phytochemicals act in different ways under different circumstances in the body



# Why does chile have phytochemicals?

- Grown under stress
  - High heat
  - Little water
- Target for oxidative damage
- Help defend the plant
- Factors effecting phytochemical levels
  - Genetic variation
  - Environment
  - Plant maturity



# Phytochemicals in Chile

- Ascorbic Acid (vitamin C)
- Carotenoids
- Flavonoids
- Capsaicinoids



# Ascorbic Acid – vitamin C

- Increases as the chile matures
- Found in the flesh of the chile
- Absorption dependent on the sodium in the meal/food
- Health benefit
  - **Antioxidant**



# Carotenoids

- Levels are similar within cultivars
- Absorption is dependent on the fat content of the meal
  - Better absorption in high fat foods
- Health Benefits
  - **Antioxidant**
  - **Protective effect of DNA**
  - **Suppression of age and obesity related diseases**
    - Cataracts, macular degeneration
    - Type 2 diabetes



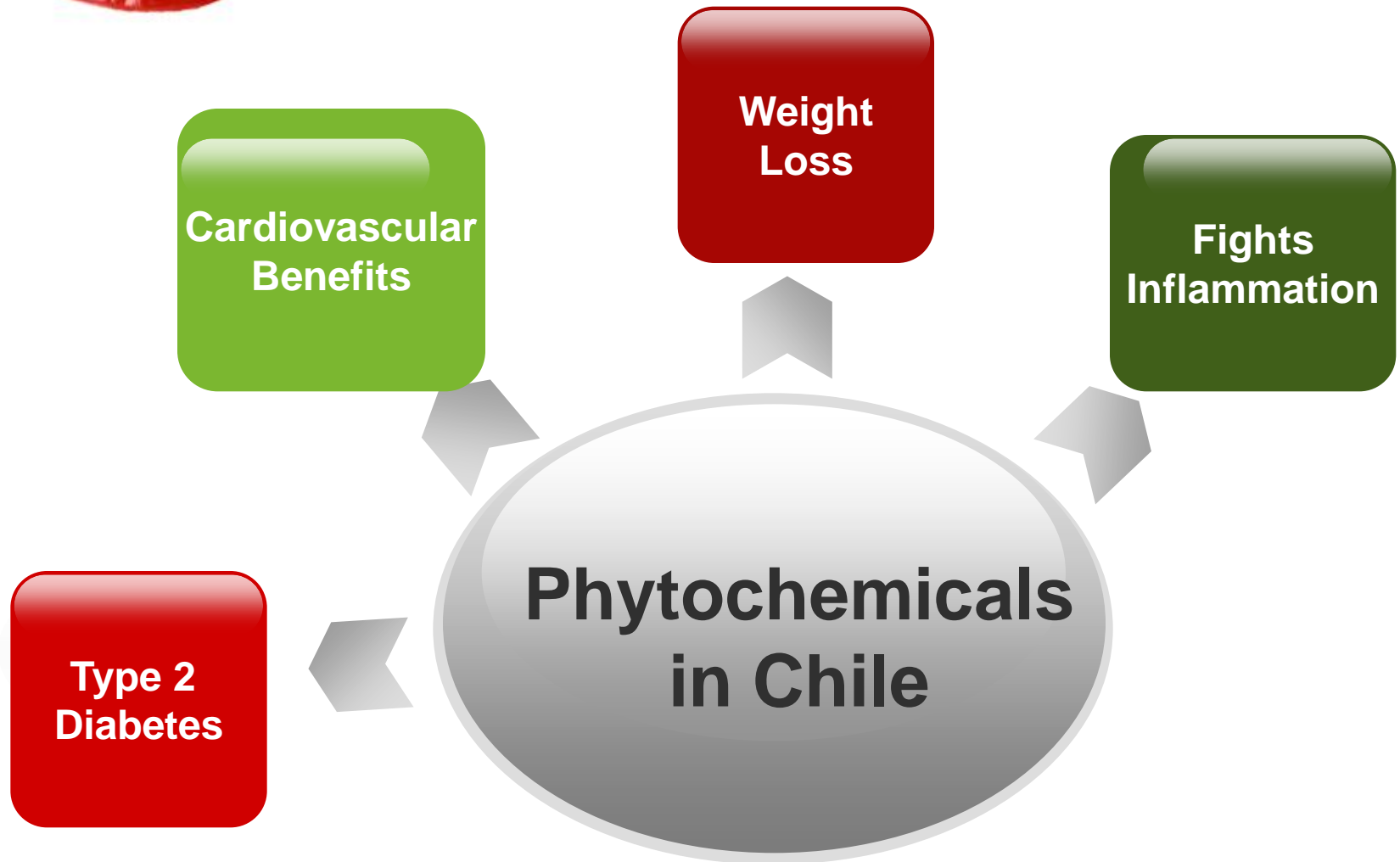
# Flavonoid

- Environmental stress increases production of flavonoids
- Decreases with maturity of the chile
- Health Benefits
  - Antioxidant
  - Reduces inflammation
  - Lowers blood pressure
  - Suppression of age and obesity related diseases



# Capsaicinoids

- Optimal levels 28-50 days after flowering
- The hotter the chile the more capsaicin
- Absorption affected by fat
- Health Benefits
  - **Treatment of pain and inflammation**
  - **Topical treatment for arthritis**
  - **Antioxidant**
  - **Inhibits some carcinogenic processes through cell death**





Let food be your medicine and  
medicine be your food

Hippocrates (400 BC)

**Thank You!**

