Some like it HOT!

Nutritional updates

Carol W. Turner PhD, RD, LD

September 2010

Chile

- Introduction of chile by Don Juan Onate to New Mexico in 1598
- Most countries grow some form of chile
- Use of chile worldwide
  - **2nd 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 ¾ cup fresh green = 143 mg
- The amount in ¾ cup fresh red = 243 mg
- The amount in ¾ 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**

Weight Loss

Cardiovascular Benefits

Fights Inflammation

Type 2 Diabetes

Phytochemicals in Chile

Let food be your medicine and medicine be your food

Hippocrates (400 BC)

Thank You!