Calcium and Vitamin D Supplements in Cancer: Consensus or Notion Commotion

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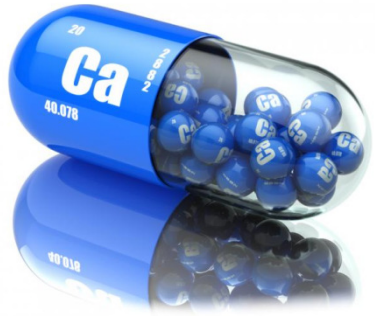


Disclosure

- Relationships with commercial interests:

  Provision of oral nutritional supplement samples for patients supplied by Nestle and Abbott

Mitigating Potential Bias

- No one oral nutritional supplement product line recommended over another to patients

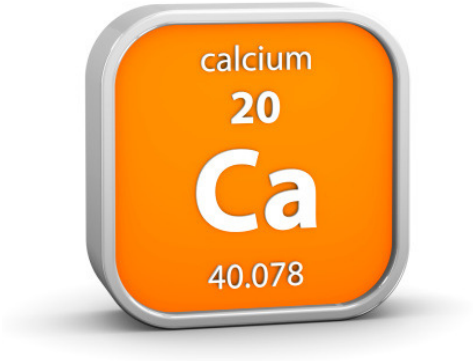
Learning Objectives

At the end of this session participants will be able to:

1. Recall the principal roles that calcium and vitamin D serve in the human body and cancer prevention
2. Describe some of the consequences of inadequate and excessive intake of each nutrient
3. List principal sources of calcium and vitamin D
4. Recall the optimal intake of each nutrient

Calcium

- Required for:
  - bone and dental health
  - vascular contraction and vasodilation
  - muscle function
  - nerve transmission
  - intracellular signaling
  - hormonal secretion



- Serum calcium:
  - tightly regulated
  - does not fluctuate with changes in dietary intakes

Calcium and Cancer Prevention

Colon Cancer	Prostate Cancer	Breast Cancer
Observational and experimental studies: • Inconsistent • Protective effect	More studies needed	No link

Consequences of Inadequate Intake of Calcium

- No obvious symptoms short term

- Symptoms of deficiency:
  - numbness/tingling fingers
  - muscle cramps
  - convulsions, rickets
  - lethargy
  - poor appetite
  - abnormal heart rhythm

Consequences of Inadequate Intake of Calcium

- Long term:
  - osteopenia (osteoporosis, if untreated)
  - eventual death

Consequences of Excessive Intake of Calcium

- renal insufficiency
- vascular and soft tissue calcification
- high levels of calcium (urine)
- kidney stones
- constipation
- micronutrient absorption
- primary hyperparathyroidism or malignancy

Principal Sources of Calcium

- Food sources:
  - cheese, milk, yogurt,
  - powdered milk,
  - fortified beverages
  - tofu
  - blackstrap molasses
  - canned sardines
  - salmon with bones





Principal Sources of Calcium

- Visit "**Canadian Nutrient File 2016**" for detailed information:

www.hc-sc.gc.ca/fn-an/nutrition/fiche-nutri-data/index-eng.php

Calcium Dietary Reference Intakes (DRI)

Females ≤ 50 y	Males ≤ 70 y	Females › 50 y	Males › 70 y
1000 mg/day	1000 mg/day	1200 mg/day	1200 mg/day

Calcium Dietary Reference Intakes (DRI)

- Breast and prostate cancer patients (hormone therapy)
  - consistent with DRIs
  - not to exceed upper limit of 2000 mg/day

- If daily calcium intake is inadequate from food, a dietary supplement may be considered

Vitamin D

- You make vitamin D under your skin: “sunshine vitamin”
- Actually a hormone
- We can make it in our body.
- Essential for the absorption and utilization of calcium and phosphorous

Vitamin D

- Required for proper growth and development of bones and teeth

- Role on the immune, endocrine and cardiovascular systems

Vitamin D and Cancer Prevention

- No strong evidence of a link between vitamin D and cancer risk
  - AICR unable to advise people on vitamin D levels and cancer prevention

Vitamin D and Cancer Prevention

- Colon cancer – too soon to make a strong case for vitamin D as an overall cancer fighter

- Vitamin D supplementation does not reduce the incidence of cancer.

Consequences of Inadequate Intake of Vitamin D

- Problems converting vitamin D from food/sunshine can set you up for deficiency

- Using sunscreen can interfere with getting vitamin D

Consequences of Inadequate Intake of Vitamin D

- Most people with low levels of vitamin D don't notice any symptoms
- Severe deficiency in adults can cause
  - soft bones
  - bone pain
  - muscle weakness
  - rickets (rare)

Consequences of Excessive Intake of Vitamin D

- Toxicity has not been observed to result from sun exposure

- Toxicity → abnormally high serum calcium → bone loss, kidney stones and calcification of organs if untreated for a long time

Principal Sources of Vitamin D

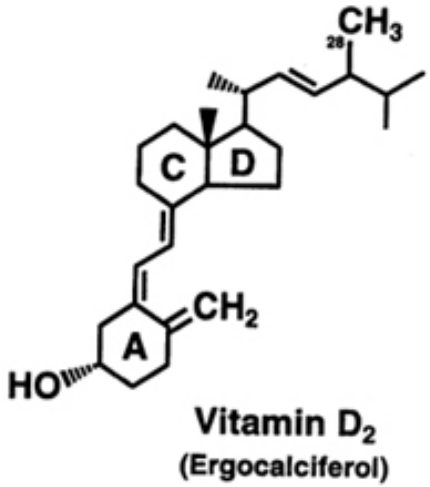
- Not found naturally in many commonly eaten foods
- In Canada some foods have vitamin D added to them
  - milk, margarine,
  - some soy/rice beverages
  - yogurts

Principal Sources of Vitamin D

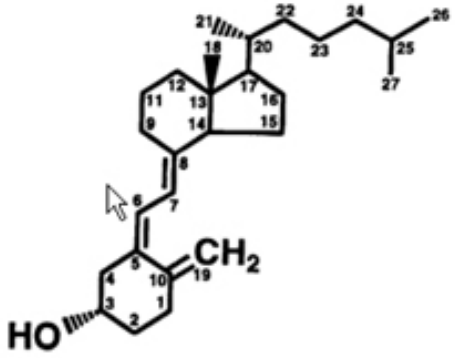
- Other good sources include
  - fish(salmon, tuna, sardines, mackerel)
  - egg yolks

Principal Sources of Vitamin D

- Dietary supplements - ? Vitamin D2 or D3



Vitamin D_2
(Ergocalciferol)



Vitamin D_3
(Cholecalciferol)

Vitamin D Dietary Reference Intakes (DRI)

Females and Males ≤ 70 y	Females and Males › 70 y
600 IU	800 IU

UL (upper limit) 4000 IU

Vitamin D Dietary Reference Intakes (DRI)

- For breast and prostate cancer patients (hormone therapy):
  - intake of 1000 IU for women
  - as per DRIs for men for osteoporosis prevention
  - from all sources not exceed 4000 IU/day UL

Take Home Message

- Healthy diet and lifestyle choices are the best
- Choose food rather than dietary supplements
- http://www.hc-sc.gc.ca/fnan/nutrition/reference/table/index-eng.php

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Thank you! Questions?

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