CAFFEINE: MORE THAN JUST A STIMULANT

Pops Health Lunch & Learn Series
What is caffeine?
How does it work?
What are the effects of caffeine?
Is caffeine safe?
What are common sources of caffeine?

This presentation is largely adapted from:
What is caffeine?

- Caffeine is a phytonutrient (plant-derived)
  - 1,3,7-trimethylxanthine
- Peak blood levels at about 1 hour
- Half-life: about 5 hours
  - Time to eliminate ½ of substance
Mostly an adenosine antagonist
- Blocks adenosine from suppressing brain functions

Its metabolites perform other functions throughout the body
- After being broken down by the liver

Easily crosses blood-brain barrier
What is caffeine’s half-life?
Caffeine’s effects

- Central nervous system stimulant
  - Blocks adenosine function
- Increases resting energy expenditure
  - Up to 6% daily (50 mg)
  - If BMR = 1600, 6% is about 100 calories
- Raises exercise-induced fat oxidation (burning)
- Increases endurance and enhances performance
  - 100 – 150 mg increases time to exhaustion
Caffeine’s effects

- Increases mental energy
  - Increase cerebral blood flow
  - “increased neuronal activity” in areas of the brain “associated with attention-demanding activities”
  - “Such increases in “mental energy” can produce increases in the functional capacity to engage in cognitively demanding tasks that can be expressed as increased vigilance, alertness, ability to concentrate, and ability to correctly choose among alternatives” (Glade)

- Increases alertness and ability to concentrate
  - 50-75mg
  - “increased self-assessed postlecture wakefulness, mental clarity, feelings of being energetic, alertness, attentiveness, ability to concentrate, and state of mental arousal”
Caffeine’s effects

- Enhances neuromuscular coordination
  - Reduce driving “lane violations”
  - Helps Navy SEALs sight and shoot more rapidly after sleep deprivation

- Elevates mood and relieves anxiety
  - 75 to 130 mg
  - Effects increase with dose
  - May remain up to 6 hours (half-life?)
  - May be better in habitual consumers
Yes

Consumption of up to 1000mg/day pose no health risks (2007)

Some evidence shows a decrease risk of heart disease, certain cancers, and dying of any cause over follow-up
  - Confounded by coffee consumption and its separate benefits

Blood pressure
  - Mixed results (at most 5/2.5 point increase in BP)
  - Tachyphylaxis – a decreased effect with habitual consumption
    - After 2 weeks, no effect

*** Caffeine during pregnancy is not recommended
Is caffeine generally safe?
Common sources of caffeine

- Coffee
- Tea
- Soft drinks
- Energy drinks
- Pills and powders
  - My favorite
- Chocolate
Meet with a coach!
- Available M-F, 8-5
- Popslive.com to schedule

Questions or comments:
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