

# Nutrition, Narcolepsy and Wakefulness: What's the connection?

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# Objectives

- Discuss Narcolepsy and Nutrition
  - How diet can affect your genes
- Review Foods that help with wakefulness and Narcolepsy
- Explore tips for developing healthy lifestyle

# Narcolepsy

- Neurological sleep disorder
  - Excessive daytime sleepiness
- Cause
  - Remains undiscovered
  - Genetic factors
  - Decreased proteins; hypocretins/orexin neurotransmitters that regulate REM sleep
  - Autoimmune process

# Epigenetics

- Is the study of compounds that attach or tag DNA. These compounds interact with genetic material but do not change underlying structure of DNA.
- Environmental conditions can flip “on/off switches” on the genes

# Epigenetics

- These compounds act as chemical tags to say; what, when and where genes should be turned on or expressed.

Environmental Conditions (stress, diet, etc)

- can affect genes indirectly by modifying epigenetic factors

# Autoimmunity

- Process which produces factors which cause inflammation and injury
- May occur against brain cells that produce hypocretin (orexin)
- low levels result in excessive sleepiness and changes in eating behaviors/metabolism

# Hypocretins (Orexin)

- Are neurotransmitters responsible for sleep and wake cycles
- They stabilize REM sleep
- These compounds are compromised in people with Narcolepsy and leads to low levels

# Etiology: most likely multifactorial

- Genetics
- environmental triggers
- autoimmune process

# Hypocretin/Orexin

- Orexin is increased by:
  - protein, fiber, omega 3 fatty acids, lactate, fructose, fermented foods and activity
- Best to get from foods not supplements
- Orexin is decreased by:
  - Sugar

# Nutrients that can help manage Narcolepsy

Calcium; dairy, dark green leafy

Magnesium; dairy, nuts, seeds

- Work together for energy production
- nervous system
- needed for muscle and bone health

Choline; eggs

- Acts as a neurotransmitter and is important in brain function

***FOODS NOT SUPPLEMENTS***

# Nutrients that can help manage Narcolepsy

**Omega 3 fatty acids**; salmon, fish, nuts, seeds

- Protects cell membranes

**B vitamins**; Whole grains

- Boost metabolism
- Essential for increased energy levels and brain function

**Vitamin C**; citrus fruits

- Protects against free radical damages

**FOODS NOT SUPPLEMENTS**

# Nutrients that can help manage Narcolepsy

- Vitamin D; dairy, fish, SUNSHINE!
- Essential for calcium absorption
- **Deficiency associated with daytime sleepiness**

Vitamin E; nuts, seeds, oils

- Increases circulation
- Protects heart functioning
- Protects brain cells

**FOODS NOT SUPPLEMENTS**



# Foods that promote Wakefulness

- Citrus fruits
- Bran cereal
- Salmon
- Eggs
- Beans
- Dark leafy greens
- Walnuts
- Honey
- Kombucha
- Sourdough bread
- Sauerkraut, pickles
- Kefir
- Protein- fish, poultry, lean meats, dairy products
- Physical Activity

# Dysregulation of Weight

- Hypocretin deficiency appears to
  - Decrease basal metabolism rate (BMR)
    - Amount of calories needed for most basic bodily functions ie, breathing, circulation etc

# Dysregulation of weight

- Hypocretin deficiency appears to
  - Decrease Resting Energy Expenditure (REE)
  - Amount of calories burned in 24 hours to maintain BMR and includes number of calories burned from eating and small amounts of activity

# Metabolism/Overweight

- Don't diet!
- 98% of successful dieters gain back weight plus some
  - Slows metabolism
  - Changes body composition (more fat less muscle)

# Metabolism/Overweight

- Make time for some Physical activity
  - Tai chi, walking, dancing, swimming, Gardening, horseback riding, yoga, and weight training

# Metabolism and Overweight

- Try to get a full night's sleep
- Studies correlate overweight with sleep deprivation
  - Avoid alcohol before bedtime-
  - Alcohol disrupts sleeping patterns which contributes to daytime sleepiness
  - Also contributes empty calories

# Metabolism and Overweight

- Keep room dark to stimulate melatonin production
- Melatonin is a hormone that regulates sleep and is correlated with healthy weights
- Avoid electronics at bedtime
- The backlight emitted from electronic gadgets inhibits melatonin production

# Developing a Healthy Lifestyle

## Get regular activity

- Tai chi
- Martial art- slow movements, meditation and deep breathing
- Improves balance, agility, strength, flexibility, muscle tone, mental alertness
- Reduces stress and anxiety, improves sleep

# Developing a Healthy Lifestyle

## Get regular activity

- Boosts energy
- Manages stress
- Morning walk (vit D)
- Increased muscle boosts metabolism
- Improves sleep
- Avoid before bedtime

# Developing a Healthy Lifestyle

## Provide reliable eating times

- Do not skip meals
- Have smaller meals and healthy snacks in between
- Include Protein rich foods at breakfast and lunch to increase alertness
- Fish, poultry, eggs, meat, nuts, seeds, cheese

# Developing a Healthy Lifestyle

## Provide reliable eating times

- Include complex carbohydrates at dinner
- Pasta, legumes, whole grains, rice, potatoes, and fresh fruit
- Calming effect
- Promotes sleepiness

# Developing a Healthy Lifestyle

- Avoid sugary beverages and artificially sweetened ones too!
- Insulin resistance and Diet Sodas
- Avoid alcohol
- Drink plenty of water

# Resources and References

- Narcolepsy Network [Narcolepsynetwork.org](http://Narcolepsynetwork.org)
- [www.med.stanford.edu/school/psychiatry/narcolepsy](http://www.med.stanford.edu/school/psychiatry/narcolepsy)
- [www.nhlbi.nih.gov/sleep](http://www.nhlbi.nih.gov/sleep)
- Narcolepsy In-Depth Report [New York Times.com](http://NewYorkTimes.com)
- Eating Disorder and Metabolism in Narcoleptic Patients. Chabas, D., et al. *Sleep*, Vol. 30, No. 10, 2007
- Health related quality of life in patients with narcolepsy. Dodel R, et al. *Sleep Med.* 2007 Nov;8(7-8):733-41 Epub 2007 May 18