



PRESENTS...

Happiness and Health in Winter

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Section I

BEATING THE WINTER BLUES



What is SAD?

- Seasonal Affective Disorder (SAD) is the development of depressive symptoms in a seasonally predictable manner
- **True SAD:** involves major depressive episodes
- **Subsyndromal SAD:** minor depression and lack of energy in winter months
 - This is *not* true SAD, but instead True SAD is often **incorrectly applied** in popular culture



Subsyndromal vs. True SAD

Subsyndromal

- No major depression
 - Mainly ‘not quite right’ during winter months
 - Frequently tired, lack motivation
- Common, becoming more prevalent
- Most can be effectively treated with lifestyle changes

True

- Major Depression
 - Ranges in severity, but can involve social withdrawal and/or suicidal ideation
- Less common, incorrectly applied
- People with true SAD should seek **professional help**



SAD Prevalence

Alaska: 10% incidence;
25% incidence of subsyndromal



New Hampshire: 10% incidence

Florida: 1% incidence

Prevalence of seasonal affective disorder at four latitudes. Rosent, L, Targum, S and Terman, M. 2, 1990, Psychiatry Research, Vol. 31, pp. 131-144.



Why so SAD?

- Believed to be caused by low light exposure in winter months
- What happens when we traverse north from the equator?
 1. Winter days are shorter = less sun exposure
 2. Temperatures colder on average = more time spent indoors



SAD: Leftover Protective Mechanism?

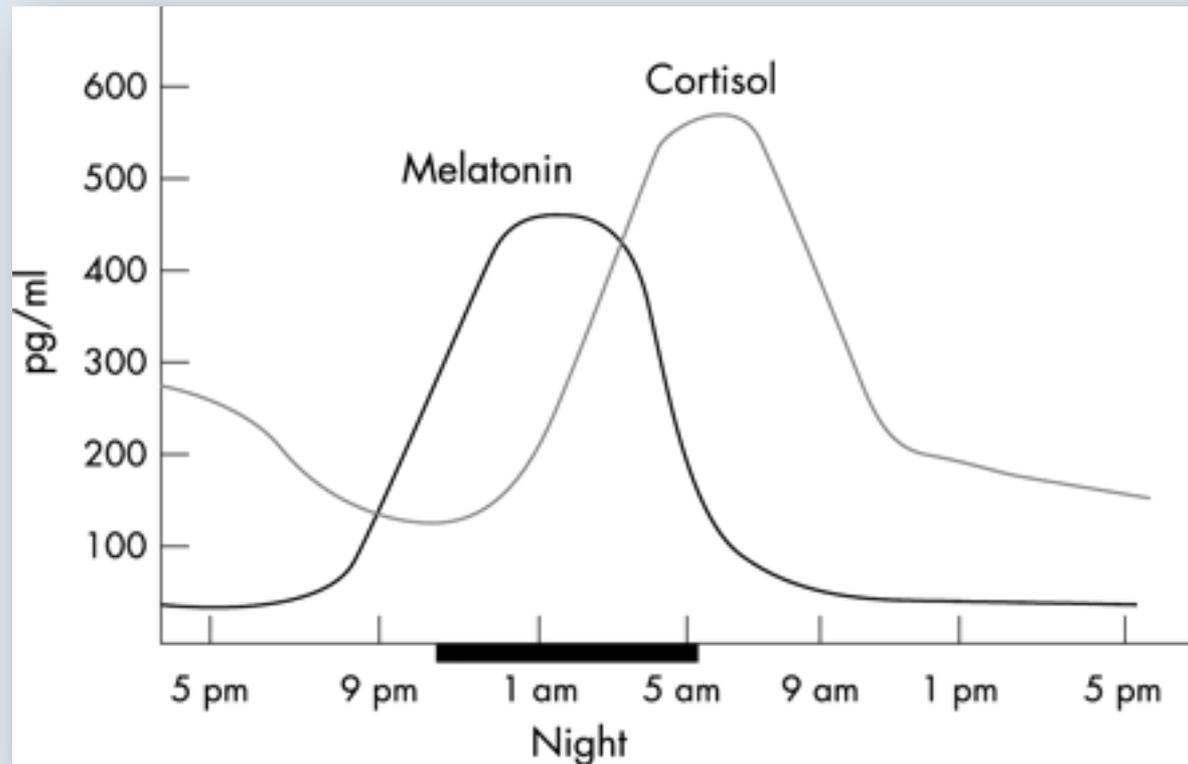
- What do animals do when there is not enough food in the environment to sustain them for winter?
 - They hibernate!
- Human hormones respond to *low light* levels in winter by making us *tired*
 - Historically: conserved calories, promotes survival
 - Today: Fatigue + necessary daily tasks = depressive symptoms



Sun/Body Connection

- **Circadian Rhythm:** changes in biologic function occurring in predictable 24 hour cycles
- The body uses sunlight to gauge what is happening on the outside
 - Hormonal changes occur based on **light levels**

Circadian Rhythm of Hormones



Ideal Hormonal Function

Melatonin

- Associated with sleepiness
- Peaks in the night at 1am
- Lowest between 9am and 6pm
- Increases in **low** light (darkness)

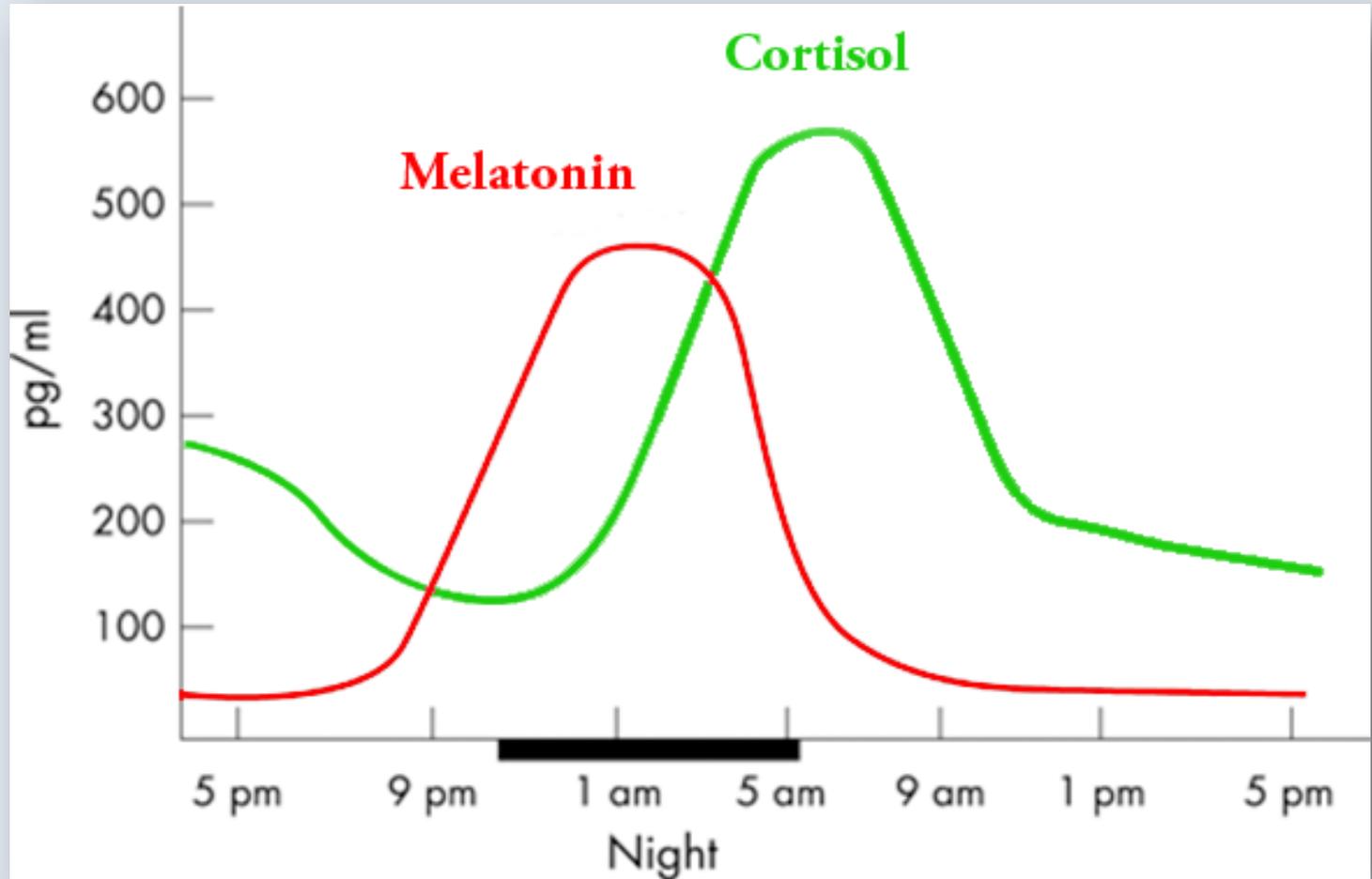


Cortisol

- Associated with wakefulness
- Peaks in the morning at 8am
- Lowest between 12-4am
- Increases in **bright** light

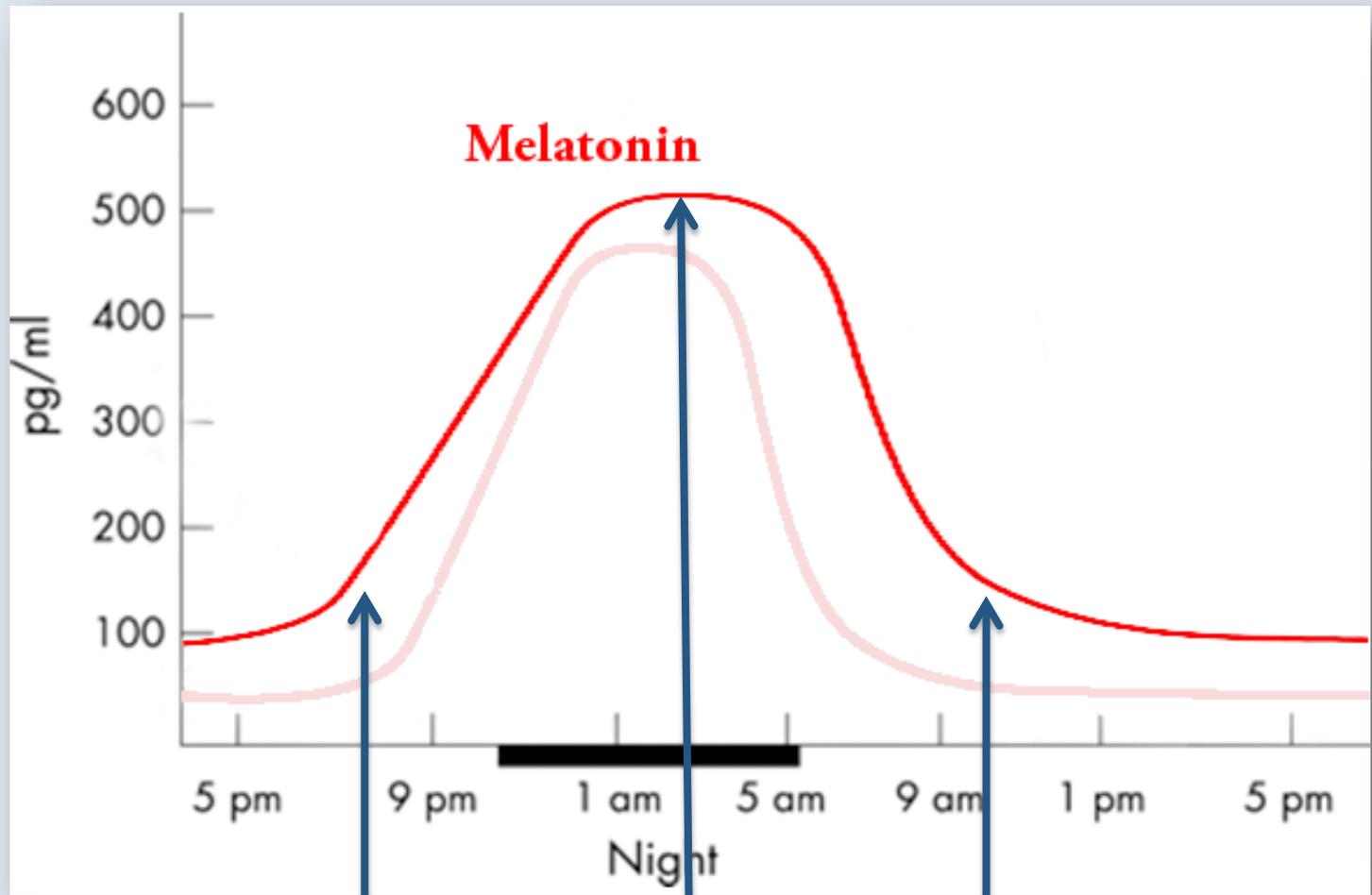
Hormones Shift in Winter

Ideal Fluctuation



Hormones Shift in Winter

Melatonin



1. Rising early d/t earlier sunset

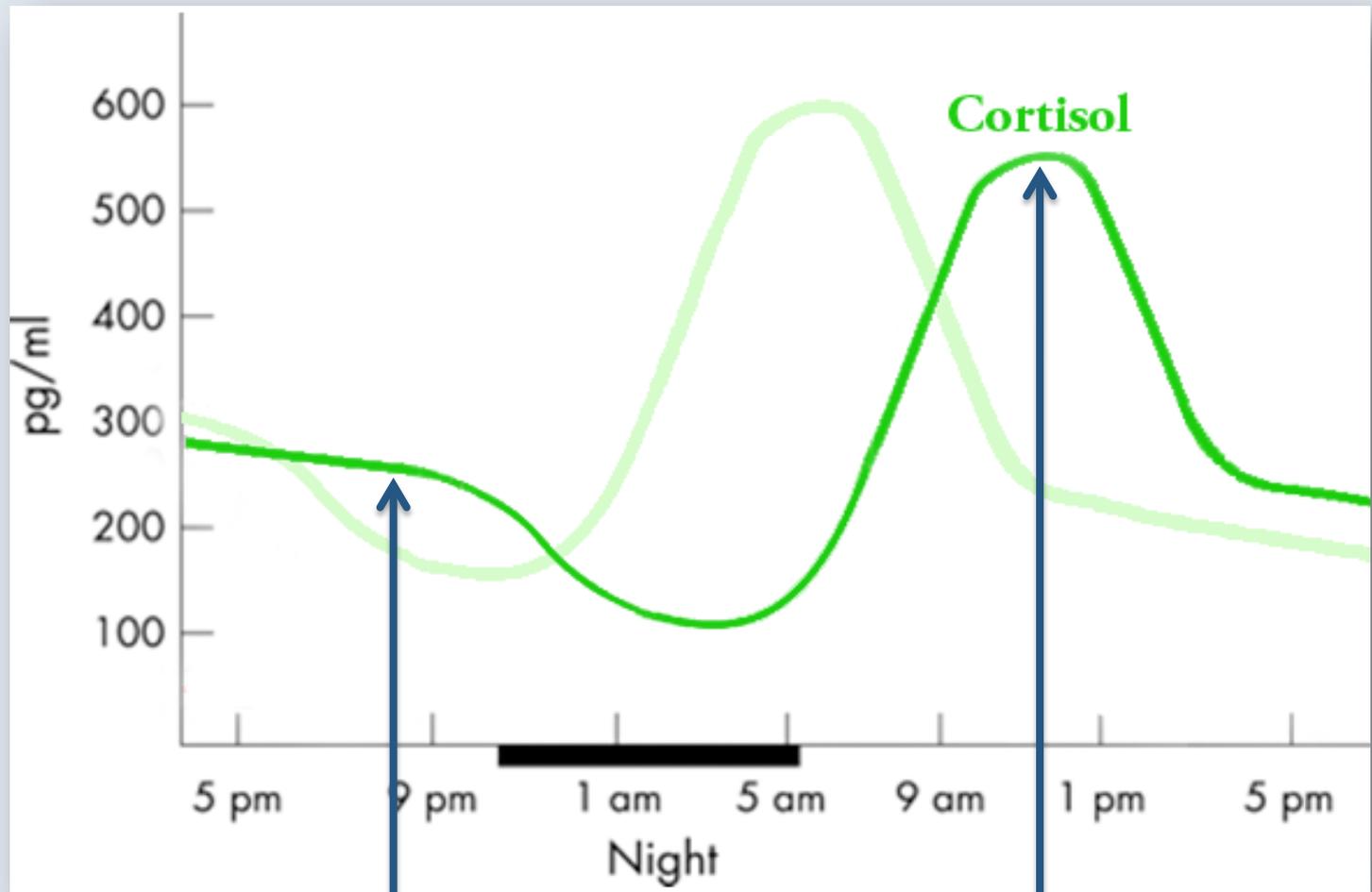
2. Peaking later in night and staying elevated longer

3. Returns to baseline later, remains higher throughout the day



Hormones Shift in Winter

Cortisol



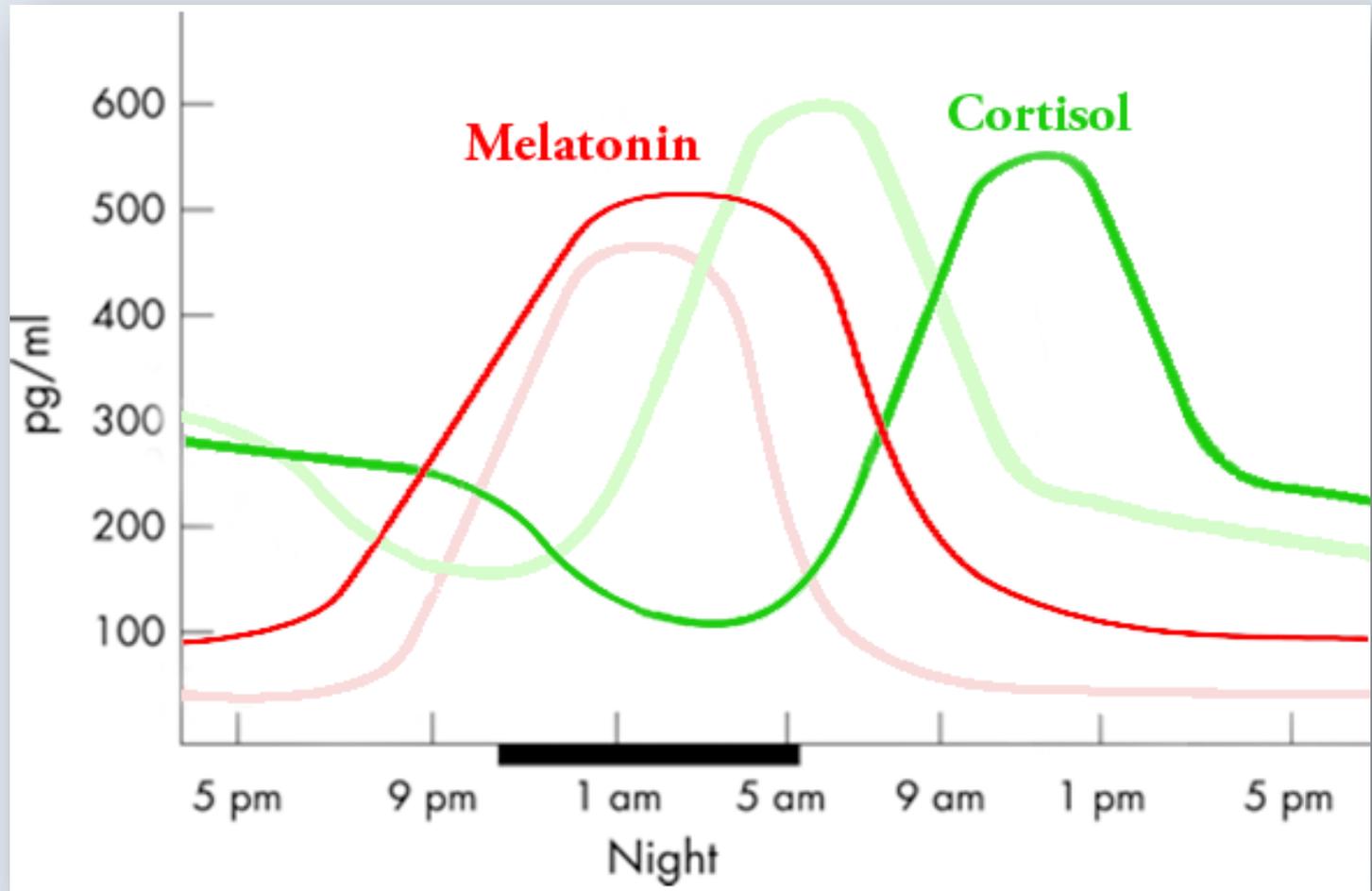
1. Remains relatively high in to the evening

2. Peaking much later in the day



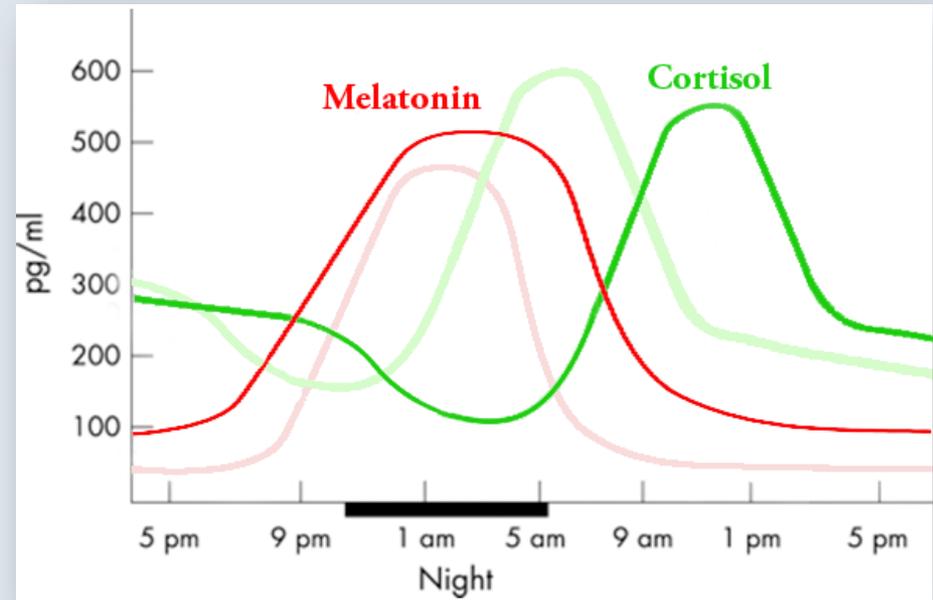
Hormones Shift in Winter

All Together



Net Result

- Elevated daytime melatonin causes fatigue and depressive symptoms
- Cortisol remains high in to evening hours, causing sleep disturbance
- *Serotonin* is converted to melatonin
 - As long as melatonin is high, serotonin is low
 - Why SSRI anti-depressants are often necessary





Regulating the Body Rhythm

- SAD is caused by environmental light producing hormones **incongruent** with our daily lives
 - Though, it would be nice to just hibernate!
- Treatment Goal:
 1. Regulate the circadian rhythm
 2. Minimize depressive symptoms



Light Therapy

- If environmental light does not permit stable biorhythms, make an artificial one that does
- Use **full spectrum bulbs** to simulate daylight during waking hours
 - Dim lights towards complete darkness in the hours leading up to bed
 - Replace bulbs in your living & work spaces
 - Closer light mimics your daily life, the better

Light Therapy Options



Traditional Full Spectrum Lamp: requires sitting in front 2-3h/day, inconvenient, not the most stunning décor!



Full Spectrum Visor: great option for home use, but impractical in the workplace. Try showing up to an important meeting wearing one of these suckers!

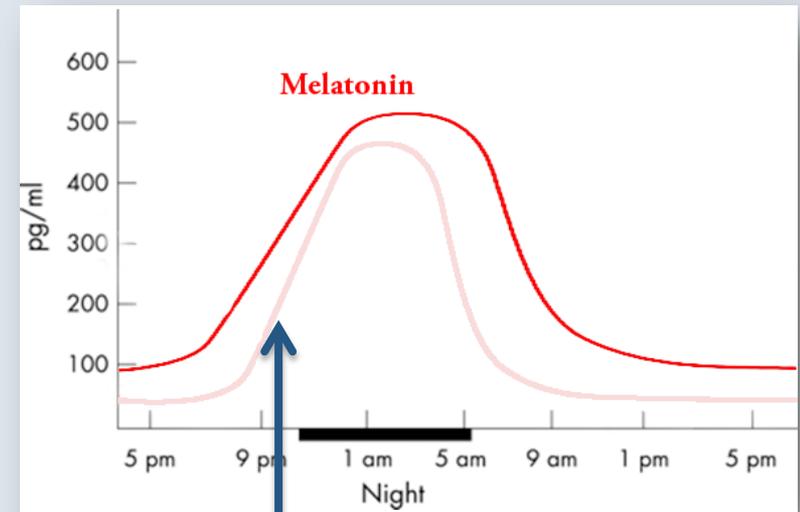


Replacing Bulbs with Full Spectrum Varieties: convenient, non-intrusive, affordable. Changing bulbs in living areas and the workplace ensures proper production of hormones during waking hours. Studies show full spectrum bulbs can increase workplace productivity by over 30% in winter months.



Well Timed Melatonin

- In SAD, melatonin secretion is out of sync
- Taking melatonin 30 minutes before bed will help regulate your body clock



Take melatonin here



Cortisol Levels

- Why do we crave coffee in the morning?
 - Caffeine increases cortisol: wakes us up!
 - Increased morning cortisol brings down elevated daytime melatonin (d/t inhibitory action)
 - Avoid caffeine after noon, as cortisol levels need to start coming down towards evening hours
- Note: caffeine is highly antioxidant, and has many health benefits when used correctly
 - Sugar and cream provide the majority of health problems associated with coffee



5-HTP

- 5-hydroxytryptophan is a precursor to melatonin and serotonin
 - Useful for more severe depression
- Provides the backbone for your body to produce adequate levels of hormone
- Use in conjunction with light therapy



Exercise

- One of the most important factors in regulating the circadian rhythm
- 30 minutes per day **minimum!**



Section II

PREVENTING VITAMIN D DEFICIENCY



Prevalence of Deficiency

- 97% of Canadians have suboptimal vitamin D levels in the winter¹
- 1.1 million Canadians have a frank deficiency²

¹Schwalfenberg GK, Genus SJ, Hiltz MN. Addressing vitamin D deficiency in Canada: a public health innovation whose time has come. Public Health. 2010. 350-359.

²Statistics Canada. Vitamin D status of Canadians as measured in the 2007 to 2009 Canadian Health Measures Survey. 2010.

Why So Deficient?

- Angle of UVB rays penetrating atmosphere unable to produce vitamin D at latitudes above 40° north (all of Canada) from Nov-March
 - Called ‘Vitamin D Winter’
- Skin does not manufacture the vitamin in winter months (regardless of sun exposure)
 - Vitamin stores run out by mid winter

Interesting fact: if your shadow is longer than your height, your skin is not manufacturing vitamin D!

Vitamin D and Disease

- Vitamin D necessary for building strong bones/teeth, long term deficiency will result in osteomalacia/osteoporosis
 - Stimulates calcium uptake in the bone
 - Stops kidneys from excreting calcium
- Heavily involved in immune reactions
 - Too little leaves you more apt to seasonal sicknesses

Interesting fact: northerly latitudes have the highest instance of SAD, breast cancer, colon cancer, and multiple sclerosis (Canada has highest rate of MS in the world), and are all linked to suboptimal vitamin D levels.





Getting Enough Vitamin D

- Vitamin D poorly obtained in the diet
 - Not found in grains, fruits, vegetables
 - High Sources: cod liver oil, fish, fortified cereals, egg yolks, liver
- Recommend supplementing vitamin D in winter (1000-2000IU/day)



Summary

1. Low light exposure in winter months alters hormone secretion cascades
2. Naturally causes fatigue to promote rest
3. Disparity between necessary daily activity and energy levels leads to 'winter blues' in many people
4. Re-setting the biorhythms involves giving your body proper environmental light cues
5. Supplementing cofactors that are either lacking or out of sync can greatly increase happiness and health in the winter
 - Vitamin D, Melatonin, 5-HTP



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