



## Study Guide & Test Questions

**The Healing Power of Essential Oils (2018)**  
by Eric Zielinski, D.C.

**CLASS: A100**

Within this book you will find numerous formulas (sometimes called 'recipes') along with a broad range of applications and detail to assist the you in the safe use of essential oils. There is much to learn along the way. Enjoy the journey and along the way take time to smell the oils!

### Preface

1. What reasons might a medical doctor have for not recommending aromatherapy?
  - A. Essential oils are not approved by the FDA
  - B. Without studying essential oils; there is no basis for patient recommendations
  - C. Essential oils are out of the scope of their practice
  - D. All of the above

### Introduction

2. Biochemical individuality is an important concept in aromatherapy as in all areas of holistic health. In a nutshell 'biochemical individuality' means:
  - A. The same sickness requires the same remedy
  - B. Everyone responds the same way to essential oils
  - C. Our physiologies are as unique as our fingerprints. Essential oils can have different effects on different people
  - D. Both B & C

**NOTE:** Biochemical individuality is important to consider when using essential oils. Just as prescription drugs (made up of synthetic chemicals) can work differently for different people, likewise essential oils (made up of plant chemicals) may not always cause the intended effect. It is not unusual for some people with ADHD to become stimulated by lavender essential oil, whereas, lavender EO typically has a sedative effect. Also, where 1 or 2 drops of lavender on a pillow may help someone fall asleep, more than that may actually keep them awake!

### Fundamentals of Aromatherapy

3. (True or False) Essential oils have been used in their present concentrated form for thousands of years.
  - A. True
  - B. False
4. Essential oils are concentrated oils that come from which of the following parts of plants:
  - A. Bark, Roots, or Resin
  - B. Leaves, Nuts
  - C. Flowers, Fruit
  - D. All of the above

5. (True or False) While essential oils have not always been used by mankind, the process of distillation was discovered and written about by the Arabs back in the ninth century. One of the earliest references about the use of essential oils by a healer was written near the end of the 9<sup>th</sup> century.
- A. True
  - B. False
6. According to the author, which is the best definition of aromatherapy?
- A. The medicinal effect of essential oils through inhalation
  - B. The therapeutic use of essential oils
  - C. The use of essential oils to enhance psychological and physical well-being
  - D. All of the above



**NOTE:** Did you know that it is not necessary to have a sense of smell to receive the benefits inhaling essential oils? According to one mouse study, anosmia (inability to smell) “did not interfere with the anxiolytic-like [anxiety preventing] effect of lavender essential oil inhalation...” <https://pubmed.ncbi.nlm.nih.gov/23567808/>

7. (True or False) There are different ways to extract essential oils and all of the products work the same way.
- A. True
  - B. False
8. (True or False) Not all plants have essential oils. The purpose of essential oils is to protect the plant from pests, bacteria, fungi, and viruses, and to heal the plant from fungal infections, cuts, scrapes and abrasions.
- A. True
  - B. False

**NOTE:** Not all plants produce essential oils. Aromatic plants are those that contain aromatic compounds – basically essential oils that are volatile at room temperature. These essential oils are odorous, volatile, hydrophobic and highly concentrated compounds.

9. (Essential oil) Purity:
- A. Doesn't guarantee safety
  - B. Doesn't guarantee therapeutic effect
  - C. Only 'therapeutic grade' oils are pure
  - D. Both A & B
10. (True or False) If you place an undiluted essential oil straight (neat) on your skin and experience a rash, bumps, or other adverse effects such as swelling and itching, this is called sensitization. It does not mean that the essential oil is cleansing your body of harmful toxins. It is not a detox reaction.
- A. True
  - B. False

**NOTE:** Page 29. Sensitization is the beginning of an essential oil allergy. It is best to make it a practice to always dilute essential oils, never use any of them neat. While they may work gently, they are concentrated and VERY powerful!

The popular remedy Tea Tree oil (TTO) is used for a variety of skin diseases and is frequently applied neat (undiluted on skin). Tea Tree oil has also caused the most published allergic reactions of any essential oil since cases began to be reported in 1991. “Fresh TTO is a weak to moderate sensitizer, but oxidation increases its allergenic potency... Most reactions are caused by the application of pure oil; cosmetics are the culprits in a minority of cases.” <https://pubmed.ncbi.nlm.nih.gov/27173437/>

Oxidation occurs when essential oil constituents, which are the chemical compounds found in plants, begin to break down. This degradation process can cause essential oils to be less effective at best by losing therapeutic value, and damaging at worst causing sensitization and increasing the potential for allergic reactions. The main causes of oxidation are:

- Exposure to oxygen such as once a bottle has been opened.
- Heat in a warm room, hot car, or if unrefrigerated. Citrus oils are especially quick to degrade and refrigeration is necessary to lengthen the shelf life.
- Light/Sunlight. Typically, why essential oils are stored in amber glass bottles is to protect them damage from light sources.



**11.(True or False) Essential oils last indefinitely.**

- A.True
- B.False

**IMPORTANT SAFETY NOTE REGARDING CHILDREN:** Page 30.

“The majority of cases of essential oil poisoning involve accidents with young children, often between 1 and 3 years of age. Approximately 75% of cases in the USA are in children up to 6 years old. Parents (and consumers in general) need to be aware of the risks. Perhaps contrary to expectation, young children will drink an undiluted essential oil. One report tells of a 10-month-old infant who stood up in her crib, reached for a bottle of camphorated oil, removed the cap, and drank approximately 1 oz (about 30 mL) (Jacobziner & Raybin 1962a). In an Australian report of eucalyptus oil poisoning, 78 of 109 children of 5 years or less ingested solutions intended for vaporization, and the majority were ages 1–3 years (Day & Ozanne-Smith 1997). Children are at risk because:

- Natural inquisitiveness leads them to examine materials by putting them in their mouths.
- A liquid that is being examined by a child will probably be swallowed rather than sipped.
- Being smaller than adults, children are more susceptible to toxic substances.
- Metabolism in very young children is less effective than in adults.

Some unfortunate infants have died because a parent administered the essential oil by mistake, thinking it was, for example, castor oil. Some died because the essential oil was intentionally administered, either by a parent or doctor, who was not aware of the toxic consequences. But in most cases, a bottle of essential oil was within reach of the child and they were able to open it.

Essential oil poisoning in children is not a new problem. ...Statistics compiled for the USA show that in 1973 there were reports of 530 ingestions of camphor-containing products, 415 in children under the age of 5 years (Phelan 1976). The same year, doctors recommended that the sale of camphorated oil should be restricted (Bellman 1973). In all of these cases the products involved were over-the-counter (OTC) preparations, the majority being camphorated oil. Many OTC products contain camphor at 1–10% (Kauffman et al 1994). Camphorated oil contains similar quantities of camphor to several essential oils (20%), and the risk to young children from these oils is very similar. There have also been serious toxic incidents in young children who have inhaled preparations containing essential oils that have been mistakenly instilled into the nasal cavity.

**...Virtually all cases of serious poisoning from essential oils have arisen after oral ingestion.**” Essential Oil Safety A Guide for Health Care Professionals by Robert Tisserand, Expert in Aromatherapy and Essential Oil Research.

12. (True or False) You should use essential oils based upon the studies of its most powerful chemical component.

- A. True
- B. False

13. (True or False) While constituent studies are valuable, essential oils should not be used solely based upon knowledge of their constituents. This is because each oil contains multiple constituents and its effect is based upon a synergy of these constituents along with other properties of the essential oil.

- A. True
- B. False

14. (True or False) An inordinately low price for essential oils only means that you are getting a great buy!

- A. True
- B. False

**NOTE:** “An aromatherapy-grade essential oil may contain up to 400 components. However, a typical GC analysis will detect over 200 but only chemically identify up to 15 of the major components. These components may not include all those compounds that play a role in the action of the essential oil. The analysis is very useful, though, for identifying oils and detecting any adulteration.” Essential Chemistry for Aromatherapy by Sue Clarke BSc PhD

**“THERE IS NO SUCH THING AS A THERAPEUTIC GRADE ESSENTIAL OIL”**

-Dr. Robert Pappas

15. The words ‘therapeutic grade’ or ‘pure’ are merely marketing terms some companies use to convince the consumer to buy their product. How should a reputable brand be chosen?

- A. Verify that you can access batch reports GC/MS for the oils you purchase
- B. Sample different brands and become an expert in how certain oils affect you
- C. Enquire about sourcing
- D. All of the above

## Basic Tools & Techniques

16. (True or False) If an oil is labeled 100 percent pure and is being sold at a dirt-cheap price, it is probably too good to be true.

- A. True
- B. False

17. True or False) Always select 'therapeutic grade' essential oils. This is an international standard that is important to guarantee safety.

- A. True
- B. False

18. (True or False) Purity refers to whether essential oils are adulterated with carrier oils or synthetic chemical components. It does not reflect the essential oils therapeutic effectiveness.

- A. True
- B. False

**NOTE:** Page 37. When requesting the opinions of others about the brands of essential oils they use, be discerning. A display of confidence is not always a sign of knowledge. It is best to seek out those aromatherapists who show consistent, reproducible and safe results in their use of essential oils.



Just about all of the well-known companies have been caught adulterating their oils at one time or another. Hopefully, now that consumers are sending samples to independent labs, this unscrupulous conduct will cease. The good news is that companies are beginning to post their third-party GC/MS batch reports online.

**NOTE:** Page 38. While there is no guarantee that organic essential oils have zero contamination, there is reasonable assurance that pesticides, herbicides, and fungicides are not being directly sprayed on the plants by the farmer. Wind drift and run off contamination are possible, but the amount will likely be less than conventionally-grown herbs.

**Whatever toxins are in and on the fatty oils of the plant will be concentrated along with the other natural constituents in the resulting essential oil product.**

“There are over 400 chemical biocides (pesticides or herbicides) that might be used on aromatic plants, and many of these do carry over during steam distillation (Briggs & McLaughlin 1974; Belanger 1989; Dikshith et al 1989). The products of solvent extraction (absolutes, resinoids and CO2 extracts) are even more likely to retain any biocides, as are cold-pressed citrus oils.” Essential Oil Safety A Guide for Health Care Professionals by Robert Tisserand, Expert in Aromatherapy and Essential Oil Research.

Even well-respected leaders can have differences of opinion. This does not invalidate all of their teaching, but can create confusion. The serious essential oil user should look deeply at whatever natural health topic they are considering and be willing to change their perspective as their knowledge and conviction grows.

19.(True or False) Essential oils are not very concentrated; therefore, dilution is only necessary for pregnant women, children and the elderly.

- A. True
- B. False

## Essential Oils

20. Match the correct description to the carrier oil's method of extraction.

### Method of Extraction

- \_\_\_\_\_ Coconut Oil
- \_\_\_\_\_ Fractionated Coconut Oil
- \_\_\_\_\_ Jojoba Oil
- \_\_\_\_\_ Apricot Oil
- \_\_\_\_\_ Borage Oil
- \_\_\_\_\_ Evening Primrose Oil

### Descriptions

- A. This oil derived from seeds can be consumed for its gamma linolenic acid (GLA) content.
- B. This oil stays liquid at room temperature and never goes rancid.
- C. An oil known for its ability to deeply penetrate the skin. It is actually a type of plant wax.
- D. Derived from its flowers this carrier can be used for essential oils and is beneficial for women's health.
- E. Botanically, this carrier oil is derived from a fruit and not the nut it is named for! It is a saturated fat that easily penetrates the skin, and does not feel greasy after use.
- F. Taken from the kernel of this plant's fruit, this is a lightweight and nourishing oil that closely resembles the natural sebum produced by the skin.

*Evening Primrose*



21. (True or False) Plastic bottles are a great, inexpensive way to store essential oils.

- A. True
- B. False

**NOTE:** Page 46. Solubol is a liquid solubilizer which is used to dissolve 'disperse' small and light lipophilic (oil-loving) ingredients in water. Solubilizers dissolve clear in the formula. Another option, especially when the formula is oil-heavy, is the emulsifier called 'modified tapioca starch'. Modified tapioca starch is natural and safe to use, comes in powder form and is also a bit easier to find. In foods, modified tapioca starch is used as a thickening agent, stabilizer or an emulsifier (think of those oil and water salad dressings). However, to get the right product be sure that the tapioca starch you select has been "modified". Emulsifiers, turn the solution a cloudy white.

Aloe vera oil and organic grain alcohol (as stated in this text) are not emulsifiers or solubolizers and should not be used for that purpose. However, stirring essential oils into Castile soap or other liquid soaps, gels or shampoos \*may\* work. Not because they are an emulsifier, but because there are emulsifiers already in them.

Castile soap comes in unscented and is useful for creating the blends of your choice. Aloe vera gel \*may\* work only because the gelling agent includes an emulsifier. I say \*may\* for these products, because adding essential oils can change the emulsion as well as the effectivity of any preservatives. No guarantees.

**NOTE:** Page 48-49. There are various methods of blending essential oils. The “Top, Middle, and Base” is only one method and not necessarily the most therapeutic. Consider our Master and Clinical Aromatherapist diploma programs if you are interested in delving into the therapeutic art of blending.

**NOTE:** Page 55. Again, alcohol is not a solubolizer and neither is Stevia extract (which contains alcohol). Diluting the essential oil with a carrier oil or an emulsifier such as modified tapioca starch is a much better option.



22. (True or False) **Before ingesting essential oils** it is wise to consult with a health care provider if you are taking pharmaceutical or over-the-counter drugs.

- A. True
- B. False

**NOTE:** Page 57. The text states: “One drop of essential oil is the flavor equivalent of about one teaspoon of your average dried herb.”

Here is some ‘food for thought’. Let’s say we were making dinner and wanted to use a teaspoon of Lemon Balm in our curry or bean pot but didn’t have any in the cupboard. We remembered that we had Melissa (Lemon Balm) essential oil. Then we carefully added only one drop to the curry. **How much plant material was used to distill that one drop of essential oil? One and a quarter pounds!** From that we calculate, one small 5mL bottle containing 50 drops of essential oil is the result of 62.5 pounds of Lemon Balm plant matter.

Let’s do a little more math. Five well-known essential oil companies found on the internet had advertised prices for 5mL of (not organic) Melissa essential oil. The prices ranged from \$46.95, \$74.95, \$95.00, \$118.25, to \$213.49. The average price for 5ml (50 drops) was \$109.73. Therefore, the average cost for one drop is \$2.19.

Next, three herb distributors advertised their prices for one pound of organic cut and sifted herb. The prices were \$27.16, \$29.24, and \$32.60 averaging \$29.67 per pound. One heaping teaspoon of this herb weighs 1 gram. There are 453.5 grams in a pound. The average cost for one heaping teaspoon of this herb is a mere 6.5 cents! While essential oils have many medicinal benefits, it may not be sustainable ecologically or economically to use them for other purposes. Each individual has to weigh their personal priorities, resources, and then decide ethically how they choose to use their oils.

The purpose of sharing this is not to be a “negative Nelly”. Far from it. There are a lot of aspects related to the ever-increasing use of essential oils that should be taken into consideration. We find it beneficial when authors raise topics such as this to enhance our discussion.

23. (True or False) Everybody loves peppermint! Peppermint is fine to use with children under three years old.
- A. True
  - B. False
24. The maximum adult daily oral dose of any essential oil includes ALL methods of assimilation whether it be topical, diffused, or taken orally. Eucalyptus (*Eucalyptus globulus* and *radiata*) should be limited to no more than 600 mg which is (about \_\_\_\_\_ drops per day.
- A. 7
  - B. 10
  - C. 20
  - D. 25



**NOTE:** Page 70-71. Lemon essential oil and lemon juice are not the same. Lemon juice is made from the meat of the lemon and contains vitamins, minerals, phytonutrients, antioxidants and fiber. Lemon essential oil is made from the rind (peel) of the lemon, usually cold-pressed. While there are nutrients in the lemon peel, these nutrients do not end up in the essential oil.

Most of the chemical constituents in lemon essential oil are monoterpenes. The primary monoterpene is Limonene – a great organic solvent often used for cleaning, thinning paints, furniture polish and dissolver of gum/adhesives. Monoterpenes are easily oxidized, which means that citrus essential oils, such as lemon, do not keep well (To preserve the shelf life of citrus essential oils, consider storing them in the refrigerator). It is dangerous to ingest oxidized essential oils, diffuse or use topically. The best use for any oxidized oil is in homemade cleaners, just be sure to wear gloves while using them.



**NOTE:** Page 73. From the text: “Rosemary even has a history of stimulating hair growth.” Absolutely! Additionally, it is important to increase circulation by massaging the scalp using the fingertips while using products with Rosemary in them.

25. If you’re trying to have a baby, which essential oil/massage lubricant do you NOT want to use?
- A. Lavender
  - B. Rosemary
  - C. Vetiver
  - D. Ylang Ylang

26. (True or False) Using lavender oil for a better night's sleep is very effective. It enters the bloodstream within 5 minutes without creating a long-lasting sedative effect. Lavender is eliminated from the bloodstream within 90 minutes.
- A. True
  - B. False



**NOTE:** It takes approximately 220 pounds of lavender flowers to produce one pound of lavender oil.

27. Ease Pain: What is at the heart of most painful conditions, from injuries to chronic illness?
- A. Calmness
  - B. Toxicity
  - C. Inflammation
  - D. Anger

## Chapter 6

28. (True or False) Essential oils work synergistically, in that the efficacy is amplified when they are blended together.
- A. True
  - B. False
29. An important practice for using essential oil protocols is: (*Select all that apply.*)
- A. Do not use for a prolonged period of time
  - B. If they cause sensitivity, keep using them
  - C. Switch every month or so
  - D. Always use up the whole bottle
30. (True or False) Improve cognitive function by using Spearmint oil in combination with Rosemary, Lemon, and Lavender.
- A. True
  - B. False
31. When bacteria overgrowth has occurred in a spritzer (page 118): (*Select all that apply.*)
- A. The smell is reminiscent of lemons
  - B. It will turn blue
  - C. There will be a change in color
  - D. It will smell rancid

## Chapter 8

32. (True or False) To ensure that essential oils are able to bypass gastric juices and reach the gut, you must consume them within enteric-coated capsules (time-release capsules).
- A. True
  - B. False

33. Traditionally thought to help constrict blood vessels that can cause a hemorrhoid to swell, which one of the following oils is a key ingredient in the Hemorrhoid Sitz Bath formula?
- A. Roman Chamomile
  - B. Frankincense
  - C. Lavender
  - D. Cypress
34. For weight loss, which of the following oils has been found to have the ability to naturally suppress appetite?
- A. Lime
  - B. Peppermint
  - C. Cypress
  - D. Oregano

## Chapter 9

35. Of the \_\_\_\_ chemicals we detected in umbilical cord blood we know that 180 cause cancer in humans or animals, 217 are toxic to the brain and nervous system, and 208 cause birth defects or abnormal developments in animal tests.
- A. 78
  - B. 23
  - C. 191
  - D. 287
36. Which **three** essential oils did a study find most effective at killing acne-causing bacteria completely within five minutes? (*Select all that apply.*)
- A. Cinnamon Bark
  - B. Thyme
  - C. Tea Tree
  - D. Rose

## Chapters 10-12

37. (True or False) The chemicals and fake scents in canned air fresheners have been found NOT to be carcinogens and neurotoxins.
- A. True
  - B. False
38. Teenagers who regularly consume Red Bull, Monster, and other so-called performance enhancers are particularly at risk of developing serious health concerns such as:
- A. Physiologic dependence
  - B. Exacerbated psychiatric disease
  - C. Disrupted sleep patterns
  - D. All of the above
39. (True or False) Peppermint improves smooth-muscle tonicity, which helps people breathe better by expanding their lung capacity.
- A. True
  - B. False

40. Cats lack \_\_\_\_\_ in their liver that helps metabolize many chemicals, therefore, they are susceptible to toxicity from a wide variety of sources.
- A. Vitamin A
  - B. Lipids
  - C. An enzyme
  - D. Iron
41. (True or False) In general, the smaller the dog, the more you want to dilute essential oils.
- A. True
  - B. False
42. With animals that groom frequently, topical application of essential oils means \_\_\_\_\_ application.
- A. External
  - B. Diffused
  - C. Internal
  - D. All of the above

### Chapters 13-15

43. Which essential oil has medicinal benefits known to ease cough and cold symptoms, stimulate the immune system, be an effective anti-inflammatory, and help relieve menstrual cramping?
- A. Fennel
  - B. Eucalyptus
  - C. Wintergreen
  - D. None of the above
44. (True or False) The chemical compounds in essential oils can greatly reduce the pain, stress, and anxiety that most women experience during birth. In fact, they can even help (safely) speed up the labor process.
- A. True
  - B. False

45. Which is the emulsifier in the After-Birth Sitz Bath recipe?

- A. The Epsom salts
- B. The Castile soap
- C. The Jojoba oil
- D. The Evening Primrose oil

#### **After-Birth Sitz Bath (makes 1 bath)**

- 1 cup Epsom salts
- 1 ounce evening primrose oil
- 1 ounce jojoba oil
- 1 ounce unscented liquid Castile soap (Dr. Bronner's is a great choice)
- 1 drop lavender essential oil
- 1 drop Roman chamomile essential oil

**Add a solubilizer to protect sensitive mucosal skin when using a candida douche!**

46. (True or False) If you are on the SAD (Standard American Diet), are on recurring cycles of antibiotics, or are dealing with unresolved chronic stress in your life – all common triggers of candida – then using essential oils to beat yeast infections is like taking one step forward and two steps back.

- A. True
- B. False

**Chapters 16-17**

47. (True or False) Your body does not follow your thoughts, which means that your health will not follow your beliefs.

- A. True
- B. False

48. One trial measured neurotransmitter levels found in blood samples of \_\_\_\_\_ women and discovered that, by simply inhaling clary sage oil, levels of the stress hormone cortisol dropped considerably and serotonin levels were elevated.

- A. Pregnant
- B. Menopausal
- C. Anxious
- D. All of the above

49. (True or False) In animal studies, pine oil, specifically stood out as being able to protect from bone loss.

- A. True
- B. False

~ END OF TEST ~

**There are two articles, [Sleep Much? Part I](#) and [Sleep Much? Part II](#) on pages 13 - 25 that are important to read.**

# Sleep Much? (Part I)

by [Darlene Jorgens](#)



There is no more restorative agent than sleep. While one sleeps protein synthesis occurs. This is crucial because protein synthesis is the activity that lays the foundation for the proper functioning of all the cells in the body. During protein synthesis tissues are healed and physical and mental processes are restored. There is also an emotional healing component and perceptual learning occurs while one is asleep. Perceptual learning is the ability to discern the meaning of what we encounter through our senses of touch, taste, see, hear, or smell. If any of these processes are short-circuited, then the whole person suffers as the body is not able to heal or restore itself.

## **An Interesting Sleep Study...**

In 1987, Thomas Wehr, a psychiatrist from the National Institute of Mental Health conducted a study using 15 men imitating the light exposure in the midst of the dead of winter in middle latitudes and its effect on sleep patterns. Various indicators were monitored throughout each night such as temperature, hormones, brain waves, etc. For comparison another set of measurements was taken later on when the men slept for only 7 to 8 hours as is more common today.

The results of the first study was amazing. "As the study volunteers adjusted to their artificial circumstances, their sleep patterns relaxed into distinct phases. The men slept only about an hour more than normal, but the slumber was spread over about a 12-hour period. They slept for about four to five hours early on, and another four to five hours or so toward morning, the two sleep bouts separated by several hours of quiet, distinctly nonanxious wakefulness in the middle of the night

The early evening sleep was primarily deep, slow-wave sleep and the morning episode consisted largely of REM, or rapid eye movement, sleep characterized by vivid dreams. The wakeful period, brain wave measurements indicated, resembled a state of meditation." [1] The total hours equaled approximately nine hours per night. Up until as little as one hundred years ago our ancestors slept nearly nine hours per night, just as the men in this study with all the external stimulation minimized.

## **It's Prolactin, More or Less**

When people are sleeping with no artificial light at all they generally sleep twice every night. Called biphasic or bi-modal sleep, they go to bed around 8 p.m. and wake up around midnight, then sleep again from about 2 a.m. until daybreak. The hours in between first sleep and second sleep reveal a surge of prolactin that modern-day monophasic sleepers never experience.

In biphasic sleep between the first and second sleeps a higher level of prolactin is secreted than when people sleep in one full "sleep" from evening until morning. As we know it, prolactin is that hormone produced by the pituitary gland that stimulates breast development and lactation in women. It is also necessary in males and non-lactating females at low levels to produce a feeling of sexual satisfaction. In birds, prolactin is the hormone that causes them to go broody and contentedly sit on

their eggs for extended periods of time. It is this same hormone that also that produces the feeling of peace and contentedness in the wake phase between first and second sleep in biphasic sleep.

In Dr. Wehr's study it was found that the men's prolactin release was linked to the onset of darkness. During the long 14-hour nights, prolactin doubled shortly before sleep and remained high for the whole first sleep, wake, and then second sleep phases. However, once men returned to a modern eight-hour nightly sleep, the prolactin released stayed the same, but here is the clincher, it was restricted to that shortened time frame. Instead of 12 to 14 hours of increased prolactin each night, men are now getting at best eight hours, but likely much less.

This raises questions. One of them being, how does a minimum of six hours less prolactin release per night affect male physiology overall? Researchers know that men with prolactin deficiency often struggle with impotence and depression. WebMD states, "The research, published in the August 2003 issue of *Annals of Internal Medicine*, shows that ED is common among older men and sexual function sharply decreases after age 50." [2] Perhaps this is a hidden contributing factor to erectile dysfunction (ED) that ought to be explored.

It is interesting to note that the people in these studies feel so awake during the daytime that they say they have never experienced true wakefulness before in their lives.

### **Back in the Day...**

Sleep prior to the 1600s included biphasic sleeping, a practice that most would be unfamiliar with today. This type of sleep described in literature as 'first sleep' and 'second sleep' was still a common occurrence with country folk or "laborers" as late as the 19<sup>th</sup> century. As the range of night, especially in the winter season could be as much as 12 hours in duration, people would commonly sleep for three or four hours and then wake for two or three hours, and later return to sleep until daybreak.



Those hours in the middle of the night were used for many reflective tasks such as prayer and meditation, reading, and studying, and sometimes other mundane tasks such as tending the fire, sewing, or chopping wood. Yet typically, this time was primarily one of reflection or socialization. If one was out and about and a neighbor had candlelight emanating from their dwelling that would signal someone was awake and ready for a bit of a social visit!

### **Illuminate the Night**

In the preindustrial era until the industrial revolution, biphasic sleeping continued in rural areas while, towns and cities were having natural gas lanterns installed as street lights and even as a method of illuminating the interior of homes and industry. This was readily accepted, especially by the wealthy, as lighting was useful to discourage theft as well as to provide opportunity for people to move about after dark. In those early days of in-home lighting aristocrats continued to sleep in biphasic fashion, however, they began to go to sleep later, wake briefly, and then awake from second sleep much later, well into the morning.

A doctor from the 1500s explained the reason why the working class conceived more children than city dwellers was "that they typically had sex after their first sleep." [3] While there is something to be said for romance, it makes sense that many women, especially busy mothers, might enjoy three or four hours of recuperative sleep before intimacy. The first phase of sleep is an extremely important restorative phase of sleep. We will discuss this in more detail later.

SLEEP DEBT				
Year	Average Hours of Sleep per Night	Weekly Deficit in Hours	Annual Deficit in Hours	Annual Deficit in Days
1910	9	0	0	0
1942	8	7	364	15.17
1960 -> present	7	14	728	30.33

Historian A. Roger Ekirch found that “references to the first and second sleep started to disappear during the late 17th century. This is thought to have started in the upper classes in Northern Europe and filtered down to the rest of Western society over the next 200 years. Interestingly, the appearance of sleep maintenance insomnia in the literature in the late 19<sup>th</sup> century coincides with the period where accounts of split sleep

start to disappear.”[4] As people began to deny their natural biological rhythms to stay up into the evening, they became more fatigued upon awaking.

Although a number of early experimenters contributed to the invention of the incandescent light bulb, Joseph Swan and Thomas Edison developed a better design and Edison had the funds to commercialize the product. It was not long before he introduced the incandescent light bulb in New York City in 1882.

In May 1936, Congress passed the Rural Electrification Act as part of President Franklin D. Roosevelt’s “New Deal”. For the most part, this rural electrification was accomplished in the 1950s, yet even before that cities and towns were electrified. Street lights and urban homes already had the luxury of illuminating the night, causing the body’s biorhythms which had been embraced since the dawn of mankind to be ignored.

### Work More, Sleep Less

World War II (1939-1945) called many women to the workforce. They were needed in these jobs to replace the men who had joined the military. Where before the war began most women fulfilled a culturally-accepted role of homemaker and child-raiser, now a full-time job beyond their full day’s work was not only encouraged, it became expected. A famous cultural icon of this era was “Rosie the Riveter.” Rosie the Riveter stood for the many women who took factory jobs building aircraft, producing ammunition, and other supplies in support of the war effort. Long work hours added to family life which also served to increase their daily stress.



Once having entered the workforce, many women continued to work after the war efforts ceased. The additional income helped the family to afford luxuries or “extras” that soon became necessities such as cars, store-bought food (because they no longer had the time nor the energy to garden.) Unfortunately, for the working mother, with the hours demanded by both job and family and the changing societal beliefs about sleep, the only place that could ‘give’ was her precious time for sleep.

### Play More, Sleep Even Less

The 1950s saw the dawning of the age of technology. As the days continued to be filled with work and increased stress, people sought entertainment to help them relax. By the 1960s about 45 million homes had televisions across the United States and TV viewing grew to more than five hours per day. From there, video games, personal home computers, smart phones, and a host of electronic gadgets occupied free time and unfortunately time that might be better spent sleeping.

The following chart will help to visualize the stark reality of the changes occurring not only in the United States but in other countries as well. Life was getting increasingly difficult and stress had become an everyday word.

The year 1910 was used as a baseline as the amount of sleep that people got then was likely what was common throughout antiquity. 1942 is another marker when it was found that the average amount of sleep was reduced by an hour per night. By 1960, another hour was lost reducing the average amount of sleep each night by two hours from 1910!

This translates into a loss of more than half-a-day of sleep each week. If this doesn't blow your mind, at just seven hours of sleep per night, an entire month of sleep is lost each year!

**Only two hours of missed sleep from the nightly average of nine experienced 100 years ago is the equivalent of an entire month of 24/7 sleep lost each year!**

## **Sleep Debt**

A condition called "sleep debt" is created when the amount of sleep a person needs increases because they have not gotten enough in previous days. While people may think they can get away with having less sleep, this is not entirely true. What generally happens is that they become used to performing their daily routine in a deficit mode. The greater sleep debt that is incurred, the less the person is able to identify it.

Fortunately, the body is faithful to give warning signs when it does not receive enough sleep. Feelings of excessive sleepiness, yawning, irritability, and daytime fatigue drive people to consume caffeinated beverages to get through their day. These beverages are often counterproductive, making it even more difficult to fall asleep at night.

Microsleep, where one dozes off for a few seconds to a couple of minutes without noticing is another indication of being sleep-deprived. The EEG test results of sleep-deprived rats, reflect that certain parts of the brain fall asleep while others stay awake. Researchers do not fully understand the mechanisms behind this.

## **Types of Sleep Deprivation**

Full sleep debt is when a person is awake for a minimum of 24 hours. This is not as rare as it might seem. Think of any college campus when reports are due and exams are looming or a stressed working mother when her child is sick and she stays up all night and goes to work the next day, or computer programmers propping themselves up with coffee and energy drinks until an employer's deadline is met.

Partial sleep deprivation is what most people experience at a more chronic level when sleep is not adequate for an extended period of time such as several days or weeks. One study found that "the results of those who slept for six hours each night for a period of 10 days were similar to those who are completely sleep deprived for one day." [5] It can be caused by not enough hours of sleep, disrupted sleep, or physical conditions like sleep apnea.

Sleep disruption can occur because of sickness, pain, or the use of pharmaceuticals such as alpha-blockers, beta blockers, corticosteroids, diuretics, SSRI anti-depressants, medications containing alcohol/caffeine/nicotine, sedating antihistamines ACE inhibitors, ARBs, Cholinesterase inhibitors, H1 antagonists, glucosamine/chondroitin, and statins, Theophylline (an asthma med), and higher doses of thyroid hormone, as well as over-the-counter painkillers. [6]

Alcohol has been shown to disturb the second half of sleep by increasing wakefulness after its initial effect of sedation, even when consumed up to six hours before bedtime. "However, alcohol consumed within an hour of bedtime appears to disrupt the second half of the sleep period. The

subject may sleep fitfully during the second half of sleep, awakening from dreams and returning to sleep with difficulty. With continued consumption just before bedtime, alcohol's sleep-inducing effect may decrease, while its disruptive effects continue or increase.”[7]

**While most adults require from seven to nine hours of sleep each night, about one third of the population gets less than six hours per night.**

### **Can't Sleep?**

Insomnia, or disrupted sleep is something that was almost never recorded in the history books two hundred years ago but has become commonplace in our modern culture. Insomnia includes having trouble falling asleep, staying asleep, or getting enough sleep. Acute insomnia is considered brief. It comes on with stressors such as getting bad news, anticipating a stressful event (good or bad) such as a test at school, financial stress, work stress, relationship stress, etc.

Among adults, “15 to 20 percent have a short-term insomnia disorder which lasts less than three months, 10 percent have a chronic insomnia disorder, which occurs at least three times per week for at least three months.”[8]

### **The Four Stages of Sleep**

**Stage 1** – Lasts only about 5 – 10 minutes. Theta waves are produced by the brain as the body transitions from wakefulness to sleep.

**Stage 2** – Lasts about 20 minutes. Body temperature begins to decrease and the heart slows down. Most sleep is spent in this stage.

**Stage 3** – SWS (Slow Wave Sleep) – This is deep sleep where slow delta brain waves occur and the deepest sleep happens. During this stage muscles relax and blood pressure and breathing rate drops. This is also the stage where sleepwalking tends to occur. This relaxation helps to ensure the blood is circulating properly and that there are proper levels of blood glucose.

**Stage 4** – Rapid Eye Movement (REM) or paradoxical sleep. “REM sleep is also referred to as paradoxical sleep because while the brain and other body systems become more active, muscles become more relaxed. Dreaming occurs due to increased brain activity, but voluntary muscles become immobilized.”[9]

When sleep deprivation occurs, it is primarily of REM sleep and generally results in cognitive issues. REM sleep is believed to affect healthy moods, learning, and memory storage. During REM signals are sent from different areas of the brain to the body. Migraines may be triggered or increased due to increased expression of “the proteins p38, PKA, and P2X3, which are known to play an important role in initiating and sustaining chronic pain.”[10]

“Researchers performed a study in order to determine the effect REM sleep deprivation has on the way a person responds to a stressful event. They applied mild electric shocks to participants while they slept and studied how their brains reacted. According to the results, the people who spent more time in REM sleep showed a lower level of brain activity related to fear than those who spent less time in deep sleep. The researchers believe that if a person is getting enough REM sleep, they might be less susceptible to suffering post-traumatic stress disorder (PTSD) after experiencing a fearful event.”[11]

“It is important to realize that sleep does not progress through these stages in sequence. Sleep begins in stage 1 and progresses into stages 2, and 3. After stage 3 sleep, stage 2 sleep is repeated before entering REM sleep. Once REM sleep is over, the body usually returns to stage 2 sleep. Sleep cycles through these stages approximately 4-5 times throughout the night.”[12]

## You Decide

While monophasic sleep is what most of us have known and practice, it is a relatively recent happening within the past two hundred years or so. Although there are many other factors that affect health we would be wise to consider the necessity of sleep in a culture that operates on the lack thereof. Sleep is the very thing the body needs to replenish and restore itself. Might it be presumptuous to entertain the thought that we have somehow “evolved” and no longer need those nine hours of nightly sleep that many of our ancestors received? That is likely.

Is biphasic sleeping preferable to a seven to nine-hour monophasic sleep model? Perhaps. Then again, perhaps not. There is even a polyphasic sleep model for those whose interest is piqued, those who ‘wake up’ at the subject of sleep.

Each person is a unique individual who needs a certain amount of sleep to maintain good health. Chronic health conditions require even more sleep for the body to restore itself. Although it sounds good on paper, dis-‘ease’ can be caused by sleep deprivation because a solid seven hours may not be enough. The industrialized society is programmed to work around productivity-based paradigms and do not base their work upon the biological rhythms of the individual. While it may not be feasible to adapt to a biphasic sleep modality, even if that were the answer, there is much the individual can do to maximize the sleep structure to which they adhere.

Some may heave a great sigh of relief with the new understanding that waking briefly in the quiet of the night can be a normal part of the sleep cycle and not always an indicator of dreaded insomnia. Forearmed with knowledge, these peaceful moments can be enjoyed by leaving the bed for a brief time of prayer, meditation, or reading using dim, non-stimulating light, then to return to bed again as they begin to tire once more.

Are there lessons to be learned in looking backward to a simpler time when folks were more connected to their surroundings? In the comments below, share your observations whether biphasic sleeping might be a valuable health-promoting tool, or maybe not so much... We would love to hear your thoughts on the value of sleep.

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# Sleep Much? (Part II)

by [Darlene Jorgens](#)



Welcome back! In “**Sleep Much (Part I)**” we learned that many of our ancestors slept in a biphasic manner consisting of two sleep periods each evening with a quiet awake time in between, especially during the winter season. Some cultures that sleep in a biphasic fashion take a siesta or mid-afternoon nap, especially in the hot summertime mid-afternoons. Young children, the elderly, and some by personal preference may take a short nap in the afternoon. It is interesting to note that there remains a billion people in the earth who still practice biphasic sleep.

## Myth or Not?

Are humans fundamentally different from all the other animals because our sleep has been consolidated into one continuous nocturnal session? If one considers how other mammals such as dogs, cats, chimpanzees, horses, etc., sleep (which are actually poly-phasic in their sleeping patterns), man may not be so unique after all. In the annals of history well-known people such as Nikola Tesla, Leonardo DaVinci, Salvador Dali, Napoleon Bonaparte, and Winston Churchill have been recorded as having practiced polyphasic sleep.

The industrial revolution of the the late 18<sup>th</sup> and the late 19<sup>th</sup> centuries caused biphasic sleeping to lose popularity. Natural gas-powered street lamps increased in prevalence, especially in the cities. The first homes “wired” for artificial light were actually “plumbed” with gas pipes to gas-powered lanterns. Electricity was soon discovered, the modern light bulb was invented ...and the artificial light pierced the darkness.

Further changes that came about from the industrial revolution changed how people thought about time. Factories and “production lines” caused people to become more conscious of productivity and efficiency and therefore time and began foregoing a second sleep. In face, there were actually reform movements on both sides of the pacific ocean called “The Early Rising Association.”

Monophasic sleep is practiced by most of industrialized society today. Monophasic means that we get all of our sleep at one time or in “one phase,” usually at night. Should something serve to disrupt that sleep such as our jobs, children, insomnia, etc. it is difficult to get caught up on missed sleep the same day. This is because modern society changed to support a monophasic-type of sleep cycle. When sleep is routinely missed, the chronic lack of sleep we then experience is called sleep debt or sleep deprivation.

For those of us in the “developed” world, It would be wise to take note that artificial illumination has an enormous effect on human physiology. It literally alters/resets the human body clock, called the circadian rhythm. Many people find that the longer they stay awake, the more pressure they feel to sleep in the remaining time they have because of the obligations of the next day.

Thomas Wehr, Psychiatrist from the National Institute of Mental Health commented on his 1987 study. “By compressing all nocturnal biochemistry and all sleep patterns into an eight-hour period pretty

much year-round, Dr. Wehr said, ‘we essentially live in an endless summer, from the day we are born until the day we die.’ The consequences of that compression have yet to be charted.”[1] This is the million-dollar question. In just a moment we will take a deeper look into how human physiology responds to our modern sleep habits.

Now while our ancestors did not appear to sleep better than we do, their quantity of sleep was more significant. They slept an average of nine hours in a 24-hour time period, compared to our modern average of seven.

<b>SLEEP NEEDS</b>	
<b>Age Group</b>	<b>Hours</b>
Adult	7 - 9
Teenager	8 - 10
Child, 6 - 12 years	9 - 12
Child, 3 - 5 years	10 - 13 Including Naps
Child, 1 - 2 years	11 - 14 Including Naps
Infants, 4 - 12 months	12 - 16 Including Naps

*Data: American Sleep Association, Sleep and Sleep Disorder Statistics*

“A large-scale study published in The Journal of Adolescent Health in 2010 showed that a scant 8% of US high school students get the recommended amount of sleep. Some 23% get six hours of sleep on an average school night and 10% get only 5 hours.’ (Garey et al.) The teenage years are very stressful, and meeting the minimum hours of sleep is crucial to managing stress and maintaining good health.”[2]

As we can see from the aforementioned adolescent study, sleep debt does not only affect adults. Sleep debt has a significant effect upon teens. Imagine, how high levels of stress and the disruption of hormones incurred by young people affect their developing bodies and psyche. Is it any wonder that teens have such startling high rates of mood disorders, depression, and suicide never seen before?

When sleep takes a low priority, sleep debt will also affect the smallest among us who need many more hours of restorative sleep to rejuvenate their rapidly growing bodies for the activities of the next day. Age appropriate bedtimes seem to be a thing of the past as our culture whirls itself into a frenzy of activity with most people consistently not getting enough of their body’s greatest healer,... sleep!

### **Yet Another Difference Between Men and Women!**

Dr. Wehr’s insightful study also found that the release of the main circadian hormone, melatonin, secreted by men during winter was exactly the same as that secreted in the middle of summer. Lightheartedly, Dr. Wehr quips, “When it comes to seasonal change, men just don’t get it.”[3] Yet in comparison to men, the woman’s sleep hormone melatonin is dramatically increased in the winter and much less so during the summer. This information, although inadvertently discovered, may comprise part of the answer to why Seasonal Affective Disorder (SAD) disproportionately affects women in the winter season.

**Sleep debt can lead to impairment that equals or exceeds being legally drunk.**

### **Surprising Dangers of Sleep Deprivation**

“Drowsy driving has caused or contributed to hundreds of thousands of motor vehicle crashes and thousands of deaths in recent years. Estimates of drowsy driving-related accidents, injuries and deaths vary, however...The NHTSA reports that, on average, an estimated 83,000 crashes a year were blamed on sleepy drivers between 2005 and 2009.”[4] Sleep debt affects the ability to perform one’s work safely and efficiently. Shift work increases the risk as well. Hospital medical errors in the United States are estimated to cause 100,000 deaths each year. Sleep deprivation has been implicated in a large percentage of these errors.

## **Psychological Effects of Sleep Deprivation**

As sleep debt becomes chronic, hormone levels become unbalanced. Adrenaline levels climb making the person physically and mentally distressed. Symptoms begin to present as brain fog, irritability, or grumpiness, along with anxiety, and panic attacks, memory problems, increased perception of pain, a racing heart, and hyperventilation. For some, chronic stress causes depression or a combination of anxiety and depression when adrenaline begins to dip. Other psychological indications of sleep deficit can be visual or auditory hallucinations, impulsive behaviors, suicidal thoughts, and in those with bipolar disorder, mania can be a result.

How many of us have had anxiety because of our sleep debt, which causes more anxiety resulting in an increased inability to sleep, which then causes even more sleep debt and more pressure to sleep? A vicious cycle, but one that most of us have experienced at some point.

## **Physiological Effects of Sleep Deprivation**

Paul Bergner writes, "The state of sleep debt, induced when hours of sleep drop below the physiological requirement of the individual, includes profound changes in the endocrine, cardiovascular, and immune systems. Herbal and other natural treatments for these systems will ultimately fail unless the underlying sleep debt is corrected. Herbal nervines and hypnotics, administered in the context of lifestyle changes to induce recuperative sleep and establish normal sleep duration and depth, become critical to the successful practice of herbalism in chronic disease. Sleep debt is a major obstacle to cure, and is present to some extent in the majority of patients in the U.S. today." [5]

Once sleep debt becomes chronic symptoms can present as depression, nervous system misfiring, tingling in the arms and/or legs, headaches or back aches, and unexplained pains and odd sensations in different parts of the body. Beyond this reduced inspiratory muscle strength, decreased immune function, and corresponding frequency of sickness have been identified. This is supported by a number of studies revealing that just a small amount of sleep deprivation causes a reduction in natural killer cells that are crucial to the work of defending the body against viral infections and perhaps even cancer.

"A survey of Japanese men showed that two or more days per week with less than five hours of sleep were associated with a 200-300% increase in heart attacks (Liu and Tanaka). This is in the range of five to ten times the risk of having high LDL cholesterol. In a group of women, those reporting less than five hours of sleep per night had an 82% increase in cardiovascular events (Najib et al). Those sleeping fewer than six hours had a 30% increased risk. These risks in women are higher than risks for moderately elevated total cholesterol or LDL cholesterol." [6]

The natural health professional should be interested in your quality and quantity of sleep. It is important to understand that most people have become acclimated to sleep deficit and no longer recognize it as abnormal. It is common to compensate for sleep deficiency by consuming caffeine, energy drinks, etc. The professional should also be armed with remedials and techniques to assist the you in obtaining and adhering to a regular, restorative sleep cycle. This will provide the impetus the body needs to make huge gains toward homeostasis and get you well on the path toward healing.

Dr. Henry Lindlahr a Naturopath who founded the Lindlahr College of Natural Therapeutics in 1904, as well as opening and running The Lindlahr Sanitarium. The sanitarium, "a 300-bed inpatient facility in Chicago, routinely prescribed complete bed rest on weekends for his outpatients suffering from chronic disease." [7] Rest and sleep are still reasonable recommendations by modern natural health professionals.

## **Disastrous Effects of Sleep Deprivation**

“Less than 1 week of sleep curtailment in healthy young people is associated with striking alterations in metabolic and endocrine function.”[8] This study found carbohydrate tolerance was lowered and there was increased sympathetic tone. These are indicators of a higher potential for developing insulin resistance, hypertension, and obesity.

In this age of stress, toxicity, and nutrient deficiency, sleep deprivation is the catalyst which is sending children over the edge and into an abyss of chronic disease. “Old people’s diseases” are now occurring with alarming frequency in children. Sadly, as a society we have reached the turning point where children are likely to have shorter lifespans than their parents.

**“A baby born in the U.S. in 2017 is expected to live to be 78.6 years old, which is down from 78.7 from the year before.”**

*– Uptin Saiidi, CNBC [9]*

Findings from a study on the impact of sleep debt on metabolic and endocrine function states that “glucose tolerance was lower in the sleep-debt condition than in the fully rested condition, as were thyrotropin concentrations. Evening cortisol concentrations were raised and activity of the sympathetic nervous system was increased in the sleep-debt condition.” It continues, “Sleep debt has a harmful impact on carbohydrate metabolism and endocrine function. The effects are similar to those seen in normal aging and, therefore, sleep debt may increase the severity of age-related chronic disorders.”[11]

**“The average life expectancy in the U.S. has been on the decline for three consecutive years.”** (Written in 2017. It continues to decline.)

*– Uptin Saiidi, CNBC [10]*

A decrease of thyrotropin or thyroid-stimulating hormone (TSH) as mentioned in the study above, has significant potential. Consider this, the medical community often relates causation for low TSH to thyroid damage, tumor growth, infection/inflammation, or a malfunctioning pituitary gland. Yet chronic sleep debt does not generally enter into consideration. Sadly, most people or their physicians do not correlate the two, therefore treatment protocols do not fix the continued sleep deprivation, making the condition worse until surgery is the only option.

When the thyroid indicator is misread and the thyroid silenced, it will not be long before another part of the body will manifest the systemic dysfunction that is continuing to occur due to sleeplessness. How sad. This might give one cause to wonder how many healthy thyroids have been removed simply because the patient was chronically sleep deprived.

Some in the scientific community believe the type of markers and diseases caused by chronic sleep loss are actually signs of early aging. In another study, we are informed that the development of Alzheimer’s may be an end result of many instances of full or chronic sleep deprivation.[12] While there may be a conglomeration of mitigating factors present in any disease, sleep debt should be considered and rest and recuperation would be a wise recommendation.

Sleep debt also negatively impairs carbohydrate insulin resistance which progresses to Diabetes Type II. It affects the inflammatory processes in the body such as increasing blood levels of C-reactive protein. The C-reactive protein test called hs-CRP is a marker of inflammation used to evaluate the risk of developing coronary artery disease. It is important because this inflammatory process damages the lining of the blood vessels preliminary to atherosclerosis, which is the hardening and narrowing of the blood vessels. This puts the person at risk for hypertension and eventually, heart attacks.

Weight gain is another side effect of insufficient sleep. When someone is sleep-deprived, the body produces less leptin, a hormone that signals satiation to the brain. At the same time, more ghrelin, a hunger-producing/appetite-increasing hormone that signals it is time to eat is produced. This makes sleep-deprivation a “gain/gain” proposition with obesity as a potential result. Additionally, ghrelin is increased in response to stress, therefore dealing with the cause of sleeplessness may be very beneficial for the person with weight issues.

### **Less is More!**

Initially, insomnia can be due to our own desires to do whatever we want. There are many reasons for this. Maybe we just want to have fun and hang out with friends, play video games, or whatever we find entertaining. Perhaps we schedule our days so tightly that any error in sleep habits causes great stress, upsetting our expectations, and resulting in a cascade of negative occurrences. Or maybe we dream so big we become overwhelmed at the many tasks we think we need to do. Burning the candles at both ends may be an attempt to create more hours in the day. However productive it may seem, it does not outweigh the ensuing destruction in our body, mind, and spirit.

Remember this concept of time and productivity is a modern contrivance. Although we may seem counter-culture or old-fashioned, we can choose to live differently. Like my mother used to say many years ago. “Tomorrow is another day.” ...and it is.

### **Prepare to Sleep**

Here are some suggestions to help prepare the mind and body for sleep:

- **Set a bedtime** allowing for adequate hours to sleep. We simply will not consistently meet unset goals. (By-the-way, it is harmful to stay awake after 1 AM.)
- **Prepare a space solely for sleeping** (and intimacy.) Do not allow cell phones, TVs, computers, or other distractions in that space.
- **Sleep in a completely dark room** that is a comfortable temperature.
- **The room should be quiet** or with “white noise.” White noise is anything that makes a soft continuous noise like a fan, or very soft, relaxing music.
- **Create a bedtime ritual** of the things you need to do before bed. The body recognizes to these patterns and will respond to them as they become habitual.
- **Exercise**, but do so early in the day as it is stimulating. Exercise improves sleep quality.
- **Don’t eat** three hours before bed.
- **Take a warm** (not hot) bath.
- **Read before bed.** Books that are interesting, but non-stimulating. Definitely avoid horror books if you are inclined toward that sort of thing.
- **Do not use computers**, phones, or TVs for at least an hour before bed. They are stimulating.

## Nutrition Necessary for a Great Sleep

**B Complex Vitamins** – A deficiency of the B complex vitamins can cause insomnia because they are necessary in the syntheses of serotonin which is necessary in the production of melatonin, the sleep hormone. Be sure to take B Vitamins in the morning so that the energizing and other necessary processes they take part in occur in preparation of sleep.

**Vitamin B12** – This vitamin is often lacking in those aged 60 or older. Without B12 the body cannot produce the sleep hormone melatonin.

**Calcium** – Calcium is necessary for the release of melatonin, a hormone that aids in sleep. It is important to eat foods high in calcium like leafy greens, kale, broccoli, fruit, and nuts. While dairy is a source of calcium it is nowhere near as bioavailable as fruits and veggies. Dairy is also one of the top allergens and a potential cause of insomnia. (Do not consume supplements made with calcium carbonate. Calcium carbonate is limestone (yes, the rock!) and is indigestible.)

**Magnesium** – Magnesium is ‘hands down’ the most important nutrient for good sleep. It is necessary in over 600 cellular processes in the body. It can help the brain relax and activate the parasympathetic nervous system which helps us to relax. It is also useful for regulating melatonin, a hormone that directs the circadian rhythm in the body. Magnesium also calms nerve activity using the same neurotransmitter pathway as pharmaceuticals like Ambien without the negative side effects.

**Potassium** – While it might not be the first mineral to come to mind, potassium is a requirement balanced with magnesium to keep insomnia at bay. People rarely get enough potassium from their diet. Potassium-dense foods are: sweet potatoes, beet greens, squash, carrots, avocado, bananas, apricots, apples, oranges, Lima beans, white beans, blackstrap molasses, and more.

**Collagen Hydrolysate, Gelatin, and Bone Broth** contain the amino acid glycine which encourages a deeper and more restorative, higher quality sleep. It also contains the necessary amino acids and peptides the body needs to help calm the nervous system.

**Essential Fatty Acids (EFAs)** may induce sleep as they are found in high concentration in the brain and used to support the transmission of nerve impulses. EFAs are absolutely required by every cell in the body to produce prostaglandins which are hormone-like substances that work as chemical messengers and regulators of a variety of processes in the body.

**Tryptophan** (the amino acid) – While it has other functions, tryptophan has sleep-inducing qualities. Tryptophan containing foods are: turkey (especially high in tryptophan), chicken, lamb, beef, game, tuna, salmon, trout, haddock, cod, mackerel, shellfish, (real) cheese, whole eggs, pumpkin and squash seeds, many beans and lentils, figs, dates, and walnuts.

## Eliminate for a Great Sleep

- **Sugar** or chocolate – Foods which contain tyromine, a brain stimulant.
- **Caffeine** – Especially in excessive amounts and in the afternoon and evenings. Taken too late in the day, it suppresses melatonin levels thereby disrupting the body’s circadian rhythm.
- **Alcohol** – While it may seem to help with falling asleep, even one serving of alcohol makes it more difficult for the body to enter deep, restorative REM sleep.
- **Smoking** – Nicotine is a neurostimulant that actually causes the inability to sleep.
- **Sleep Medications** – “Many authorities believe that they can almost only work by upsetting natural sleep cycles, thus leading to an unusual form of unnatural control.”[12]

- **Allergens** (Especially food allergens like dairy, corn, and wheat gluten.) Insomnia may be the only symptom of a food allergy and is often accompanied by fatigue, migraines, depression, anxiety, ADHD, OCD, heartburn, constipation, IBS, celiac disease, arthritis and rheumatoid arthritis, hyperthyroidism, or menopause.
- **Stress & Worry** – Identifying and eliminating triggers is important. Prayer, meditation, journaling, and exercise are all effective methods of bringing stressful situations into a proper perspective.

### Some Essential Oils to Aid Great Sleep

- **Lavender** (*Lavendula angustifolia*) - A couple drops on the pillow can be mildly sedating to the body.
- **Lavender** or **German Chamomile** (*Matricaria recutita*) - Place a couple of drops of diluted oil on the bottoms of the feet.
- Blend a couple of drops each: **Lavender**, **German Chamomile**, and **Vetiver** (*Vetiveria zizanioides*) in a diffuser 30-60 minutes before bedtime in preparation for sleep.

### Herbal Remedies Useful for Great Sleep

There are many herbs that can be helpful for inducing sleep or deepening light sleep. Perhaps relax with a cup of tea while reading your book before bedtime. Here are a few you can try:

- **German Chamomile** (*Matricaria recutita*) – Mildly sedating. Can be combined with Valerian, Oatstraw, Skullcap, and Passionflower.
- **Passionflower** (*Passiflora incarnata*) – A mildly sedative herb that is helpful for those who suffer from sleep debt caused by anxiety. Can be combined with Chamomile, Valerian, Hops, and Kava Kava.
- **Catnip** (*Nepeta cataria*) – Mildly sedative. Does not promote daytime sleepiness.
- **American Ginseng** (*Panax quinquefolium*) – Well-known in the Appalachian mountains for promoting sleep. American Ginseng relaxes the nerves.
- **Vervain** (*Verbena spp*) – A mildly sedative herb that works to decrease inflammation and anxiety. In this manner, it is helpful for supporting the ability to get to sleep.

### Homeopathics Helpful for Great Sleep

- **Coffea Cruda** is a wonderful remedy for insomnia caused by the inability to stop the mind from compulsive thinking.[13]
- **Kali Phos** is helpful for insomnia from stress-related anxiety and worry as well as mental exhaustion.
- **Natrum Mur** or **Aurum Met** may be beneficial for insomnia rooted in chronic depression or melancholy with negativity.
- **Ignatia** is better-suited for sleeplessness due to acute depression from grief, overwhelming emotions, loss of love or loved ones and with waves of sadness and weeping and dwelling in the past.
- **Nux Vomica** may be helpful for those who fall asleep but cannot stay asleep.

There are many other methods and remedies for getting high quality sleep on a consistent basis. It is best to use these remedies only while correcting the root of the problem. Should you need additional help, your natural health professional is available and competent to help you rest!

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