

A Natural Way to Resist Sleep Disorders

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Review Article

Received: 02/02/2017
Accepted: 23/02/2017
Published: 28/02/2017

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Keywords: Free radicals,
Oxidative stress, Antioxidants,
Sleep disorders

ABSTRACT

The imbalance between production and elimination of Reactive Oxygen Species results in Oxidative stress. These are harmful at high levels and they are produced more in hypoxia destruction process of Obstructive sleep apnea and many other sleep disorders. An antioxidant is a substance capable of preventing the oxidation of other molecule. In biological system they protect cells from damage caused by unstable molecules known as free radicals. Antioxidants interrupt the chain reactions by removing intermediates of free radical, and inhibit other oxidation reactions by being oxidizing themselves. Many antioxidants have been observed to cross the blood-brain-barrier (BBB) and have neuroprotective effect. Antioxidants are emerging as prophylactic and therapeutic agents. Antioxidants have natural activity of preventing neuronal loss and damage caused due to oxidative stress. This review explains that how might antioxidant supplement help in preventing major sleep disorders like, Sleep apnea, Insomnia, Obstructive Sleep Apnea.

INTRODUCTION

[Sleep](#) is very essential for us in rejuvenating our body, mind and strengthening our body's immune system, cognitive health ^[1-3]. [Sleep Medication](#) is not the only way to treat sleep disorders, which will leave us with long term side effects and can become [addiction](#). Current researchers introduced brilliant ways to study sleep in a systemic way with the help of advanced technologies like [electroencephalograph](#) (EEG) which has made work easy. Latest research has found an interesting relationship between quality and quantity of sleep and health. Inadequate sleep leads to Obesity, sudden fall in blood pressure during sleep which results in heart complications like hypertension ^[4-9]. Antioxidants are the substances that protect cells from damage caused by free radicals. Free radical damage may lead to many [neurodegenerative disorders](#). Over production of Reactive oxygen species (ROS) will results in oxidative stress which can leads to neuronal damage, hypoxia, tissue damage, apoptotic neuronal cell death. An antioxidant defence mechanism contributes the removal of this reactive oxygen and their precursors thereby inhibit formation of ROS ^[10-16].

All stages of sleep play an important in acquiring adequate sleep. Our brain regulates the transitional stages between wakefulness and sleep which in turn plays a crucial role in indicating depth and quantity of sleep. [Polysomnography](#) is used in measuring the stages of sleep also involved in measuring sleep patterns, brain wave activity, eye movement, respiration and heart rhythm ^[17-22]. [Sleep](#) is highly influenced by external environmental factors like light. Normally we pass through five sleep stages and one complete sleep cycle involves an average time of 90 to 110 minutes ^[23-28]. The two important categories of sleep are [rapid eye movement sleep](#) (REM) and non-rapid eye movement sleep (NREM), which are scientifically referred to as active and quiet sleep respectively.

REM sleep is again divided into four separate stages. [REM sleep](#) involves rapid movements of the closed eye which can be measured using electrooculography (EOG), activity of brain during sleep consists of low-amplitude brain waves, brain's oxygen and energy consumption is high during this stage, neurologically REM sleep is accelerated by the neurotransmitter acetylcholine and suppressed by serotonin [29-33]. There will be irregular and rapid breathing along with high blood pressure in [REM sleep](#) compared to Non-REM sleep. Muscles will be in relaxed condition during non-REM sleep while they are completely paralyzed and unresponsive during [REM sleep](#) which is termed as atonia which is result of brain's suppression of control muscle movement. Most of the vivid dreams we come across sleep are during REM sleep due to muscular atonia [34-44].

As per recent reports about [70 journals](#), 92 Conferences, 34 workshops are exclusively related to Sleep. As per the reports of National Institutes of Health about 12 million Americans were suffering with OSA. Some of the sleep disorders are critical and they often interfere with mental, social and emotional functioning [45-55]. There is a drastic increase in cases of [Sleep Disorder](#) because of ignorance of people in identifying and reporting the condition. The Journal of Sleep Disorders & Therapy Presents a new platform to researchers and scientist to explore the developed and cutting-edge study trends in the field of [Sleep problems](#) and treatment [56-62]. [OMICS Group](#) organizes conferences on sleep with an aim to make an everlasting relation of upcoming new strategies in the field of Sleep Disorders with the scientific community and thereby giving everyone a healthier and quality life. [3rd International Conference on Sleep Disorders and Medicine](#) is going to held on November 5-7, 2017, Madrid, Spain [63-69]. The main purpose is to promote the new developments and innovative ideas in exploring the knowledge by scientific researchers on Sleep disorders and Medicine to the community. Recently [2nd International Conference on Sleep Disorders and Medicine](#) which is known as Sleep Medicine 2016 was a huge success and on November 28th-30th, 2016 at Atlanta [70-72]. The main theme of this conference is to illuminate the topic of sleep, how it benefits our daily lives and ultimately leading to a healthier and prosperous tomorrow. Zi-Jian Cai suggests that the slow-wave sleep (SWS) for regulating the emotional balance obstructed by emotional memories were randomly accumulated during waking and the REM sleep is contrary to it, which helps in revising and extending the psychoanalysis in both therapy and theory also another study by Kathy Sexton-Radek et al. discussed that the alternative medicine use to induce sleep has high impact on reducing the difficulties in sleep as well as to reduce the chances of [sleep disorder](#) cases globally [73-79].

[The British Sleep Society](#) is an organisation for scientific, medical and healthcare professionals coping with sleeping disorders. They are a registered British charity with an ultimate goal of improving public health via promoting research and education of sleep and its disorders. [The European Society for the Advance of the Neuroscience](#) is a national non-profit organization founded in 2013 with an ultimate aim to promote the research of the Scientists worldwide. This organization works with a mission to improve the advance technology in understanding the brain and the nervous system along with the diagnosis of diseases by gathering Young researchers of different backgrounds, and making way to publish their innovative research [80-83]. [American Sleep Association](#) was established in 2002 by sleep professionals with an aim to improve and strengthen public health by growing awareness regarding the importance of sleep and the problems of sleep disorders and secondary goal is to help other such organizations that share our goal. It believes that everyone in this community can make an optimistic impact on this effort. [The Canadian Sleep Society](#) is an organization with an ideal commitment of improving sleep health of all Canadians by supporting the research, promoting high quality clinical care, making the professionals and the public to know about problems and dangers of sleep disorders [84-88].

ANTIOXIDANTS AND SLEEP DISORDERS

According to latest research, taking antioxidant supplements as [sleeping aid](#) is effective in restoring body's equilibrium during sleep and thus resulting in restful sleep. Ingredients both Vitamins and antioxidants that have shown tremendous results in providing good [sleep](#) are Valerian root extract, Vitamin B complex, Magnesium, Vitamin E, Vitamin C, Melatonin, Carbocysteine, N-acetylcysteine, etc. [89-92].

Folate deficiency results in impaired sleep and it can be treated by Vitamin B complex which helps in regulating vital

biochemical reactions of our body and induces sleep. Magnesium is a magnificent vitamin that stimulates GABA receptors and relaxes the brain to fall asleep. Recent studies revealed that Vitamin A has a crucial role in regulating brain functions of memory and sleep. N-acetylcysteine supplement has shown therapeutic potential in patient suffering with Obstructive sleep apnea, regular and long term therapy with N-acetylcysteine may reduce the use of [Continuous positive airway pressure therapy](#).

[Insomnia](#) is the difficulty in falling asleep or staying asleep, some of the most common causes of this condition are anxiety, alcohol, stress and caffeine. Some of the antioxidant vitamins like vitamin C and E are able to balance the free radicals formed in the body. Sleep patterns can be improved by vitamin C and E supplements in 100mg and 400IU per day respectively and in the form of food like strawberries, citrus fruits, green leafy vegetables, tomatoes, nuts, wheat germ, olives, etc. [93-97].

CONCLUSION

We are just at the beginning of understanding the relationship between [sleep](#) and antioxidants. This review has explained a basic relation between sleep and antioxidants in our body. Studies reveal that deprived and reduced sleep is related with reduced levels of antioxidants, and also overcoming the poor sleep resulted in increased antioxidant levels. Various studies have explained and that the vitamin C antioxidant is aiding the treatment cardiovascular problems which are associated with [sleep apnea](#) and also the studies on negative effects of obstructive sleep apnea on functioning of antioxidants were discussed. There should be an increase in the studies on how antioxidants and antioxidant foods effect in promoting sleep [98-100].

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