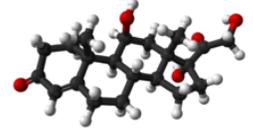


OPTIONS CENTER HEALTH TOPIC



Cortisol-Adrenal Gland's Hormone

Cortisol produced by the adrenal glands directs ovarian function. Just like the monthly biological clock in females, both men and women have 24-hour cycles or daily clocks. While fluctuations in female hormone production vary with the monthly cycle, the adrenal hormone cortisol varies with the 24-hour or daily cycle.

Cortisol levels peak in the early morning hours as the sun rises and taper off as the sun sets, reaching their lowest levels three hours after dark. This **daily rhythm** of cortisol dictates when we should be our most active and when we should rest. Anytime you fly and change time zones, the importance of this 24-hour biological clock becomes clear. Even a time change of a few hours can be enough to throw off one's normal sleep cycle.



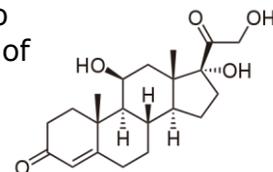
Cortisol not only dictates our sleep and wake states, it is also the primary hormone involved in directing **immune system** functioning. Have you ever wondered why when you are fighting a cold or a flu your symptoms get worse at night? It is because the 24-hour rhythm of cortisol production regulates your immune system as well. As cortisol drops at night, our immune cells become more active. These cells leave the bone marrow and spleen to protect you while you rest. During this highly active period of immune function, immune cells kill bacteria and viruses. This basic immune activity relies on appropriate levels of cortisol. As cortisol drops at night, our immune system activity picks up, killing bacteria and viruses in large numbers, leading to greater mucous production. This leads to more congestion and coughing at night as your body attempts to get rid of the mucous created from destroying bacteria and viruses. At daybreak cortisol rises and immune cells return to the bone marrow and spleen to rest and recondition in preparation for the next nightly cycle. If cortisol is out of balance, this normal immune function is compromised.

As mentioned, cortisol levels rise at daybreak, and this gives us the energy to begin the working day. As cortisol drops naturally at night [the lowest 3 hours after dark], we enter into rest and recovery, physical repair and psychic regeneration. Our immune system functions optimally if we go to sleep by 10:00 p.m. As we sleep from approximately 10 pm to 2 am, physical repair takes place. Immune cells patrol our bodies eliminating cancer cells, bacteria, viruses and other harmful agents. However, if cortisol is elevated at night, this immune function is compromised. If cortisol levels are normal during sleep, then true rest and recovery takes place, thereby enhancing physical repair and immunity. From approximately 2 am to 6am we enter into a stage of psychic regeneration. During this time the brain releases chemicals that enhance our immune system.

All during the night we are going into Rapid Eye Movement or REM sleep states and non-REM sleep, alternating between light sleep and deep dream states. This is how we process the mental and emotional events of the previous day and refresh our

minds for the day ahead. Most people need 7 to 8 hours of quality sleep to accomplish all these tasks. Without sufficient sleep the immune system is hard-pressed to keep up with its repair work and this creates the opportunity for the disease process to begin. If you miss out on proper rest, the physical repair and psychic regeneration will be compromised.

We need to learn to respond well to **stress**. The physiological response to an event is based on our perception, then our response and lastly our internalization of the event. Needing to change and move too fast from one thing to another is a form of stress. It can push us into overload and create a flight-flight response which depresses the immune system. Prayer, meditation, yoga, Tai Chi are ways to encourage the nervous system to move from being sympathetic dominant to parasympathetic dominant. Parasympathetic dominance gives us a feeling of peace, relaxation and serenity.



Cortisol is affected by the food we eat. The adrenal gland is in charge of **maintaining blood sugar** by balancing the insulin and glucagon. To do this, the intake of protein, carbohydrates and fat need to be in the proper balance. Carbohydrates affect the insulin and proteins affect the glucagon. Glucagon balances the insulin by triggering the pancreas to produce insulin. If there is not enough protein the muscles and bones break down. Eating carbs alone produces low blood sugar. It is wise to eat before you get hungry. Ideally you eat 4 meals a day, every 4 hours. The breakfast is the most important meal of the day and needs to be eaten one hour after waking. A good breakfast would consist of protein [meat or eggs] and fruit. This prevents a sugar rush.

Be aware of the glycemic index of foods. Vegetables that grow above ground are generally low glycemic and the ones that grow under the ground are high. For high glycemic index foods, eat 1:1 to the size of the protein. For low glycemic index eat 1:2 size of protein. Fiber slows insulin into the blood stream. Organic foods are known to have more nutrients than non organic foods. Vegetables can be cleaned by soaking them in vinegar water for 20-30 minutes.

Another way to affect the cortisol level is to drink 8 glasses of purified water every day. Each glass of water should be at least 8 ounces.

Did you know that recent research has shown that lack of **exercise** can shorten your life span? It is best to exercise when the cortisol is high during the day, not at night. Too much exercise can be too hard on the body. If you feel better after the exercise, it is the right amount. If you feel worse after the exercise, it may be too much.

Information taken from the audio tape, "Foundational Health Program" by BioHealth Diagnostics.

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