



THE PROBLEM: The Stress Cycle figure shows the portion of the central nervous system, which applies in the case of stress, as described by Dr. Kenneth Blum's Reward Cascade Link. The subsystems shown are an essential part of man and have been used over the millennia to produce (among others) the psychophysiological mechanisms necessary for man to defend himself. From The Stress Cycle, it is seen that in the case of continuing stress, the interrelationship among the reward/punishment systems within the hypothalamus form an unstable feedback loop. That is, their behavior is analogous to that found when a speaker steps to a microphone and snaps his fingers to test it. This sound is amplified and then reproduced by the loud speakers. The reproduction travels back to the microphone at the speed of sound. (In a typical case this might take about 1/1000th of a second.) There it is picked up and re-amplified. As this continues a 1000 cycles per second whine is heard. It is so loud that the auditorium is made ineffectual by the very public address system designed to make the hall usable.

In the stress cycle "feedback" loop the following reactions occur. All of these are obviously useful to a person threatened by a predator or a mortal enemy.

However, they are harmful to the modern person under long term stress as exemplified by the [bracketed] statements accompanying the reaction descriptions:

* Stress causes the levels of the opioids (endorphin, enkephalin, etc.) to diminish. The lower opioid levels create a sense of urgency. This sense of urgency is usually expressed as the need to respond to certain physical demands, e.g. if one drinks a couple of quarts of iced tea at 10:00 in the evening, he will usually awaken in the middle of the night with a very strong sense of urgency. [If the sense of urgency is caused by continuing stress and there is no way to relieve it, he will become irritable, easily angered, and find himself easily losing his temper. Many find relief in the artificial opioid, tetrahydroisoquinoline, released by alcohol use. As a result they often become alcoholics. Others turn to opiates such as heroin, morphine, etc. But most, rather noisily, just ruin their careers and their marriages.]

* The lowering of the opioids causes an increase in dopamine levels and a decrease in GABA levels. This produces a combination of alertness and anxiety. [The so called adrenaline rush is in large part the feeling of exhilaration caused by the dopamine release. It is exactly

the same chemical response as that following a small cocaine use. (i.e. cocaine use causes dopamine to be released in larger amounts than the body requires for normal functioning such as sexual climax on a higher level or appreciation of beauty on a lower level dopamine release.) [Continual extra dopamine release causes emotional fatigue which can become debilitating. It can also lead to anhedonia, in which case, one can no longer enjoy beauty, music, or even love, in the extreme case. Continuous anxiety can lead to depression and feelings of inadequacy.]

* The lowering of the GABA levels causes the norepinephrine levels to increase and serotonin levels to decrease. The increase in norepinephrine causes adrenalin to be released and the reduction of serotonin makes sleep difficult to impossible. [It is important to note that serotonin is a sleep enabling neurotransmitter, not a sleep inducing one. The continual lack of serotonin makes sleep very hard to achieve. Once the serotonin becomes available, the body demands the sleep it now badly needs. When this has been done the person feels rested and "fully refreshed." However, if the stress feedback continues, the lack of sleep can cause a great deal of damage to the body.]

* The increased norepinephrine encourages a quick, emotional response (e.g. anger) and discourages slower, deliberate (logical) thinking. [The anger released by the lack of the opioids is triggered more rapidly in the presence of the norepinephrine.]

* The adrenalin release causes the heart to beat both faster and harder and causes red corpuscle reserves to be placed in the blood stream. It causes energy sources, nutrients, and oxygen to be diverted from functional organs such as the liver, the digestive tract, etc. for use by the muscles. This results in the person being able to make an almost superhuman physical response to the threat. [When the heart is required to beat faster and harder over long periods of time, the illness commonly known as "high blood pressure" usually follows. Unfortunately, this condition is usually not reversible. In the extreme case, this condition can cause strokes and damage to a number of pressure sensitive body organs. It can also cause damage to the heart.] [The

continual diversion of oxygen and nutrition from the essential organs causes them to become diseased.]

* The serotonin reduction further modulates the opioids downward. Thus, the cycle repeats with continually increasing intensity.

In the case of the whine from the loud speaker, the situation is brought under control by simply turning down the amplifier's volume control. When this is done, the system is able to do what it is designed to do. However, when the feedback system in the hypothalamus causes continuing adrenalin release and diminished release of certain neurotransmitters, the human can be injured or even killed (as we have seen above.) It is fortunate indeed that the human body has the means of "turning down the volume."

THE SOLUTION: Decades of university research, have been required to find the means by which the "volume" is tuned down." As early as the 1934 research experiments of Dr. Hans Selye, it was found that when stress is long term in nature, the stored metabolites (chemicals produced by the body from nutritional intake) needed by the body to be able to "turn down the gain" are depleted. Ultimately, the correction can no longer be made. In animal experiments on beef cattle, Selye showed that once these metabolites are totally depleted, the animal dies!

The last 20 years of research by many notable scientists such as Dr. Kenneth Blum, Dr. Gerald Koziowski, Dr. Terry Neher, and Dr. M. L. Barbaccia, found that the stored metabolites are replaced, but only very slowly. They further found that the slowness was not due to a "lack of production facility" but rather a "lack of raw materials". While the quantities vary from one individual to another, getting these additional nutrients from food is generally difficult. The average person would require several pounds of exotic fish, a quart of milk, and a variety of other high cholesterol and high fat content foods daily. Thus, condensed supplementation is required to allow replacement

of the necessary metabolites during modern times of continuing stress. This can be done by taking each of the individual supplements individually or by taking a single capsule containing all of them. An example of the latter is beCALM'd™ (four patents issued) manufactured by NeuroGenesis, Inc., League City, Texas.

Whether through numerous single component capsules or the wanted “all in one capsule formulation, the supplements must contain d/l-phenylalanine and l-glutamine in combination with Vitamin A, Vitamin B₆, Calcium, Magnesium, Folic Acid and 5HTP in proper proportions.

This formulation of amino acids, vitamins, and minerals, has been shown to enhance the availability of the GABA, norepinephrine, dopamine, and serotonin, opioid neurotransmitters. Inspection of The Stress Cycle shows how such enhancement has an effect almost exactly the same as that of turning down the amplifier gain in the public address system analogy. This having been done, the human is able to withstand a great deal of modern constant stressors without suffering the effects described above. Copies of clinical studies demonstrating the efficacy of such supplementation are available upon request by telephoning 1-800-232-7563.

CONCLUSION: If asked, “What is the greatest medical cause of death in this century?” Most would reply cancer, or heart disease. In fact, it is stress! Indeed, stress is expected to be the route cause of many cardiovascular diseases and even some cancers.

Interestingly, today's preferred treatment is not a new miracle drug or even significant life-style change. (The latter often cause more stress than they cure.) It is nutritional supplementation with common items we all consume every day but not in large enough quantities. For instance, the primary ingredient is d/l-phenylalanine. It is found in fish and algae, l-glutamine is found in certain fish, (e.g. mackerel) Vitamin A is found in fish liver oil, carrots, and dairy products. Vitamin B₆ is found in liver, eggs, and dairy products. Magnesium is found in many fruits and nuts. Calcium is found in a wide variety of dairy products. Folic Acid is found in wheat, rice,

and leafy greens. And, l-tryptophan is found in milk, cheese, ham, and turkey. If one were to eat the quantities of the above foods that are required to handle modern continual stress, he or she would become obese in very short order and would probably have cholesterol and triglyceride counts that would be life threatening.

The concentrated nutritional supplementation is generally water soluble and taking too much is a practical impossibility. For instance, recommended dosages of beCALM'd range from 2 to 6 capsules per day, but an average 180 pound man would be likely to require 50 capsules a day before he noticed the first untoward effect. It would probably be slight euphoria or a very mild headache. Thus, this type of nutritional supplementation is perhaps the safest, most practical means of managing this century's new form of stressors.

Opioid enhancement by taking d-phenylalanine is shown through the work of a dozen researchers. Their works are compiled in a paper by Dr. Kenneth Blum and Dr. Michael Trachtenberg, *New Insights into the Causes of Alcoholism*, Professional Counselor; March/April '87, p35.

The precursor for GABA is l-glutamine. Its creation is generally limited more by precursor availability than by the number of manufacturing cells. Thus, increased availability of l-glutamine increases GABA availability but its production cannot cause oversupply.

The precursor for serotonin, l-tryptophan, cannot now be supplemented. However, the catalysts 'calcium and magnesium greatly enhance the body's ability to manufacture serotonin from the l-tryptophan contained in food (such as milk, cheese, turkey, and ham). The first digestion phase in the human body converts l-tryptophan to 5-Hydroxytryptophan (5HTP). The second converts 5HTP to serotonin. 5HTP has the further advantage that it, like all of the other ingredients in beCALM'd, does not require a prescription in the United States or in most of the other countries in the free world.

The highly stressed individual needs the above nutrition to survive. As a side benefit he will be healthier and, because he is not on one emotional binge after another, happier.

The Stress Cycle And Your Health



ABSTRACT: Research linking stress to physical disease has been the subject of no less than 20,000 scientific studies conducted over a five year period. Obesity, high blood pressure, ulcers, migraine headaches, strokes, alcoholism, and even outbursts of anger are all often found to be the effects of long-term stress. In fact, over 75% of all illnesses treated by doctors of family medicine and internal medicine specialists today are stress related. The brief research synopsis which follows, gives a general discussion of the internal workings of the over stressed individual and outlines the neurochemistry of stress and how nutritional supplementation and your neurochemistry can inhibit the effects of stress.