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from

THE LITTLE BOOK

Strategies for Healing Alcoholism

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Metabolic Imbalance

Alcohol, or ethanol, does its damage by disturbing metabolism in every organ and in countless, important metabolic pathways. Alcohol is a toxin as is acetaldehyde, the primary metabolic product of alcohol. Acetaldehyde toxicity is most prevalent in the liver, brain, gastrointestinal tract (GI), adrenal glands and pancreas. These toxins are powerful generators of free radicals, causing metabolic chaos through oxidative stress. Once a person stops drinking, his or her body does not suddenly return to normal. If a person has been drinking heavily for five years or longer, there is often permanent brain damage, although it may be quite subtle.

Alcoholics have poor blood sugar management. They are getting half of all their calories from alcohol and their body has gotten used to using sugar and simple carbohydrates for energy. Unfortunately, sugar does not turn into protein. Alcoholics are always malnourished and have protein deficiencies with massive amino acid abnormalities. Because protein is required for all body structures, cell structure and function, neurotransmitters, enzymes and hormones, one can quickly see that the protein deficiency alone is devastating to the body of an alcoholic. The alcoholic's malnutrition depletes all vital nutrients - vitamins, minerals, essential fatty acids, healthy carbohydrates, and amino acids. For this reason, a treatment program must address the complex metabolic and nutritional issues. No matter how well one works his 12-steps, no matter how committed he is to recovery, his body will not spontaneously recover.

Toxins will need to be slowly removed. Body tissues and organs will need to be rebuilt. Neurotransmitters will take time to return to normal, but the process is incredibly slow without providing the brain the nutrients it requires to make neurotransmitters.

Neurotransmitters

The most significant metabolic problems caused by alcoholism may be: 1) depleted neurotransmitters, 2) impaired sugar metabolism (with resulting hypoglycemia), 3) a damaged gastrointestinal tract, and 4) damaged detoxification function. Various sources cite serotonin and endorphins as the key neurotransmitters that are depleted by alcohol abuse. That is not the case. Let's take a quick look at the major neurotransmitters that are depleted in alcoholism:

Dopamine, the feel-good neurotransmitter. The amino acid L-Tyrosine makes dopamine.

Serotonin is a feel-good, mood enhancing, and sleep-promoting neurotransmitter. L-Tryptophan is the amino acids that makes serotonin.

Norepinephrine deficiency leads to a huge array of cognitive problems, including poor memory and concentration, anger, outbursts, fatigue, depression, emotional instability, tremors, and insomnia. L-Tyrosine is the amino acid that makes norepinephrine.

Endorphins are our body's powerful, self-manufactured painkillers. Alcohol causes a temporary increase in serotonin and endorphin levels, which is why alcohol makes so many people feel good. But, over time, serotonin and endorphin receptor sites are strained to the max. Acetaldehyde binds with endorphins, shutting down the body's own production of endorphins and serotonin. This toxic process diminishes the brain's ability to produce its own feel-good neurotransmitters, serotonin and endorphins, which then produces depression and other mental disorders. The brain is producing less and less of these neurotransmitters, so the individual drinks more and more in order to create more serotonin and endorphins to fill their "up-regulated" receptor sites.

GABA — The Key to Understanding Alcoholism

Researchers at Scripps Institute and articles in the journal, Science, point to the neurotransmitter GABA (gamma amino butyric acid) as one of the keys to understanding the alcoholic brain.... if not THE key. GABA is an inhibiting neurotransmitter that makes us feel relaxed. The GABA receptor site is where minor tranquilizers like Xanax and Valium work. In the short-term, alcohol increases GABA transmission in the amygdala, which is a major pleasure center, but it is also involved in fear. When a person overdrinks, GABA becomes depleted. Alcohol is believed to mimic the effects of GABA, binding to GABA receptor sites. The GABA-starved brain craves anything to regain balance. We feel miserable when GABA is depleted. And so the alcoholic drinks more and more, partly to compensate for the loss of GABA.

Unlike norepinephrine and serotonin that can be boosted relatively easily by supplementation with their respective nutritional precursors, namely L-Tyrosine and L-Tryptophan, increasing brain GABA levels is difficult. You will be able to find GABA in any health food store, but there is a big problem. Very little GABA crosses the blood-brain barrier and gets into your brain. Some GABA is made from the amino acid L-Glutamine and some is a product of sugar metabolism. Because alcohol acts like sugar, one of its functions is to create more GABA temporarily.

One cannot ingest huge enough amounts of L-Glutamine to raise GABA levels. Eighty percent of the L-Glutamine we ingest is taken up and used by the GI tract. The 20% that is absorbed is used by muscle, the immune system, and brain. In the brain, L-Glutamine turns into the inhibitory neurotransmitter, GABA, as well as the excitatory neurotransmitter, Glutamate. We don't want a large excess of glutamate.

— David Gersten, M.D.