

Immediate Release

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## Healthy Soils May Reduce Aging

New Penn State University research shows that tilled soils have reduced levels of an essential amino acid called ergothioneine (ERGO). ERGO is an amino acid or vitamin that promotes longevity or reduced aging. Healthy soils that are not tilled have more healthy bacteria and specific fungi that make this “longevity vitamin” to fight the detrimental effects of chronic diseases on human cell aging. ERGO is an antioxidant/vitamin used to keep human cells healthy. Plants, animals, and humans cannot make ERGO themselves but they can absorb it, either from the soil or from plants that absorb it. The Penn State study demonstrates that soil disturbance may directly impact a key dietary factor associated with long-term human health.

In the Penn State Study, researchers evaluated the effect of intense tillage (mold board plow, disking, harrowing), to medium tillage (chisel plowing, harrowing) to complete no-till. These plots were established in 1978, so these are long-term tillage plots. Researchers found that ERGO concentrations declined as tillage intensity increased. ERGO content declined 32% for corn, 33% for soybeans and 28% for oats in the grain. Tilled soils have more bacteria but less beneficial fungi that produce ERGO. In these long-term replicated plots, increased tillage also reduced crop yields. So over time, healthy soils with more bacteria and fungi grew healthier plants with higher ERGO absorbed from the soil, which suggests a human health benefit. The higher crop yields on no-till plots also increased farmer profit while protecting the environment. A Win-Win for everyone!

A lack of ERGO in the diet may result in increased diseases associated with aging including Parkinson’s disease, Alzheimer’s Disease, memory loss, cancer, and reduced life expectancy. ERGO is used to treat liver damage, cataracts, Alzheimer’s disease, diabetes, heart disease and is used in skin care products to prevent wrinkles, reduce signs of aging skin, and reduces sun damage.

As we age, our human cells (skin, nerves, brain, reproductive tissue, etc.) eventually give up fighting against free radicals, toxins, and harmful substance which damage human cells. Our bodies are bombarded with these harmful substances on a daily basis. Free radicals are uncharged molecules which are typically short-lived and highly reactive, causing many degenerative aging diseases through cell damage and cell death. ERGO as an antioxidant reacts

to oxidize or neutralize these harmful substances, keeping our human cells safe and increases our “vitality”. A lack of ERGO in the diet reduces human life expectancy.

Imagine you are making a fruit salad from apples, bananas, fresh peaches, oranges, strawberries, and kiwi. After a few hours, the apples, bananas and fresh peaches start to turn brown due to oxidation. The oranges, strawberries, and kiwi are high in Vitamin C; which is an anti-oxidants like ERGO to prevent browning. Adding lemon juice (high in Vitamin C, an antioxidants) to the salad reduces the browning effect by keeping the fruit fresh for a longer period of time.

Researchers have found five benefits to high ERGO levels in the human body. ERGO may defend again and reduce inflammation in the body. For example, ERGO may reduce inflammation in patients with rheumatoid arthritis. Second, ERGO is used as a supplement for Alzheimer’s and Parkinson patients. ERGO protects brain cells from oxidative damage and stress from free radicals and toxins. ERGO may even prevent or delay brain cell death. Third, ERGO is a favorite supplement in liver disease. Fourth, ERGO is often a supplement in anti-aging skin creams because it reduces skin cell damage, aging, and wrinkles. Fifth, ERGO is being studied as a supplement to fight lung diseases. ERGO has many potential health benefits and is now being more actively studied.

There are several good food sources for getting more ERGO in your diet. Mushrooms which come from fungi, are the highest source of ERGO. Only a few distinct types of fungi and mycobacteria produce ERGO. Oyster mushrooms are high in ERGO as are Porcini mushrooms. Porcini mushrooms are harder to find because they cannot be commercially cultivated. Other good sources of ERGO are king crab, cereals, oats, kidney beans, black beans, and animals who have consumed plants high in in the ERGO vitamin.

A new Regenerative Agricultural movement is beginning to form. Farms can have their soils tested by Regenerative Laboratories (Regen Lab, Inc. LLC) and if your soil are healthy with high levels of beneficial bacteria and fungi, your fields can get certified as a regenerative farm field. Some agricultural food companies are now looking to certify their produce as regenerative, which may eventually lead to premiums and or higher farm prices for healthier food.