Introduction

Congratulations: If you are reading this material, you have a keen interest in leading a healthy life, and helping your friends do the same.

The human body is a complex mechanism operated with thousands of interdependent biological, chemical and electrochemical reactions. Efforts to understand these mechanisms are constantly producing new and exciting information to help us "fight" the consequences of aging. At the very least, most people desire a healthy life, regardless of the length.

It is no secret that important hormones for essential bodily and mental functions are secreted and regulated from major organs due to the signals originating within the brain. In a perfect world of exacting diets and nutrition, the brain would get the stimuli from the foods, environment and other sensory inputs, order the appropriate organs to secrete and regulate the hormones, enzymes, and other chemicals required for bodily and mental functions. Unfortunately, this is far from the scenario in the real world. Our modern life puts immense amounts of stress on our brains and bodies and we certainly recognize the effects. The imbalances created by these factors manifest themselves in the form of depression, fatigue, memory loss, etc.

Compounding the effects from stress and physical activity, is our increasing consumption of harmful chemicals either by simply breathing the air around us, or by succumbing to the convenience of preserved foods, mass-produced meats, fish, vegetables and fruits. The impact of the dietary changes are not completely understood, but more and more is being discovered everyday. Examples can include use of flavor enhancers and artificial sweeteners, which upset the balance of the amino acids responsible for exciting neurons in our brain. While commercially successful, these products have a profound effect on the long term functioning of the brain.

Eating "healthy" has become a trend, but most people do not recognize the caveats usually associated with healthy eating. There are thousands of examples of modern day foods, which do not provide the same nutrition they did in the days gone by. An example is that of farmed fish. You may think you are eating healthy by eating salmon. However, most salmon consumed today is farmed, and is much lower in Omega-3 oils (among many things, low levels of Omega-3 are linked to Alzheimer's) than wild salmon. Why? Farmed fish are fed low cost soy and other plant foods to increase their fat content. Salmon is a carnivorous fish in the wild, and the Omega-3 oils it is famous for are produced not be a vegetarian diet, but by a carnivorous diet. Additionally, farmed fish is typically contaminated with chemicals from the water, such as PCBs. To lower the effect of the chemicals, you must cook it in ways that eliminates what little Omega-3 oils it did happen to make.

How do we counter the constant attacks on our bodies, especially from our diets and stress? Much has been written about what type of foods to eat, enough to make one paranoid about eating anything at all. Manufacturers are constantly changing names of ingredients, which become infamous. Take for example MSG (Monosodium Glutamate) a flavor enhancer. Due to all the negative publicity from MSG, it is now labeled as "hydrolyzed oat flour", "autolyzed yeast", "hydrolyzed oat flour", "sodium caseinate", etc. All these ingredients pass the scrutiny of an average person having all the intent of eating healthy. It seems the best defense to these attacks, is first, to do your best at eating healthy, and then supplement your diet with something that actually helps regulate the body functions by working in a coherent manner with the brain.

This mini booklet is designed to help introduce you to the phenomenal health benefits of an almost miraculous formulation of amino acids, oligopeptides and growth factors. The explanations and definitions that follow will give you a logical path to actually living a healthier life, even if you are currently extremely conscious about your diet.
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What is Laminine? The philosophy and story of the formulation.

Fundamental to any problem solving approach is answering the questions:

1. Has something similar it been solved successfully before?

2. What are the similarities, and what part of our problem statement may be unique and require additions to the prior solution?

When Pendura Lifestyles started down the path of providing it's customers a solid, proven nutritional supplement to aid the brain in regulating the body, we searched for an amino acid and oligopeptide combination which had all the required nourishment for the task at hand. We found numerous studies for the cause and effect of individual amino acids, peptides and hormones, not to mention an equal number of products touting high dosages of one over another as beneficial for consumption. What was not clear was how many companies had developed and proven the right "combination" of amino acids, peptides, and growth factors that the brain requires? It didn't surprise us to find there were none. So we embarked on our own research project. We looked for a balanced amino acid/peptide blend in nature, which could meet our needs with minimal additions.

That is when we discovered that in 1929 a Canadian doctor, Dr. John Ralston Davison, theorized that an injected extract from fertilized hen eggs could be helpful for a number of his cancer patients. In fact, he spent well over a decade developing and researching his theory. However, when Dr. Davidson passed away in 1943, his research on fertilized hen eggs quickly and quietly came to a halt.

It wasn't until almost 50 years later that the pursuit of fertilized hen egg extract was revived by Norway's foremost expert on egg research, Dr. Bjodne Eskeland.

Dr. Eskeland also hypothesized that partially incubated, fertilized hen eggs contained a special combination of amino acids peptides and protein fractions that could help provide an incredible array of health benefits when consumed by humans. In theory, these partially incubated, fertilized eggs – specifically 9-day-old fertilized eggs, contain all the nutrients required to start a new life. This includes vitamins, minerals and proteins, as well as important defense factors, growth factors, hormones and other biologically active components. While not much was known about the growth factor at the time, the high level of oligopeptides (small peptides) gave credence to research we had done on the necessity of rapid transport across the digestive membrane in order to derive effective benefits from amino acids.

We felt this could be the best "base" ingredient for our formulation. A patented process extracts the critical nutritional fluid from the white of an egg at the protoembryonic stage, so we called it ProtoEmbryonic Stage Extract (PESE). The extract not only

provided a mechanism of rapid transport of very critical nutrients, but also contained Basic Fibroblast Growth Factor, which is most probably responsible for the amino acids and peptides to be utilized in the right manner, by “directing” so as to say the path. The growth factor is also responsible for nurturing the bodys own stem cells both differentiated, and undifferentiated. Common amino acid formulations do not contain this growth factor, and may not be utilized by the brain in the most efficient manner.

Next, we looked at the symptoms caused most by our diets and environment, so we can “super charge” the PESE for modern day use. Skin and hair health, moods (depression), memory loss, fatigue and cardiovascular health are most affected by today’s lifestyle. These individual symptoms and how Laminine addresses them are covered later in the booklet.

Having a perfectly balanced, natural, transport mechanism, with a strong “director” we knew that we were assured of the added amino acids will not only find their way to the right spots, but will be guided properly to perform their function efficiently. We then added the amino acids most critical for the health of skin, hair, memory function, cardiovascular health and restoration of energy, from natural plant protein and marine protein.

Thus the symbiotic formulation we proudly call Laminine was born.

What are amino acids?

Amino acids are critical to life, and have many functions in metabolism. One particularly important function is as the building blocks of proteins, which are linear (straight) chains of amino acids. Amino acids are linked together in varying sequences to form a vast variety of proteins. Amino acids are also important in many other biological molecules, and due to this central role in biochemistry, they are very important in nutrition.

Amino acids join together to form short polymer chains called peptides or longer chains called either polypeptides or proteins.

Twenty-two amino acids are naturally incorporated into polypeptides and are called proteinogenic or standard amino acids. Of the twenty-two standard amino acids, eight are called essential amino acids because the human body cannot synthesize them from other compounds at the level needed for normal growth, so they must be obtained from food. The amounts required also depend on the age and health of the individual, ***so it is hard to make general statements about the dietary requirement for some amino acids.***

What are peptides?

Peptides are short polymers formed from the linking, in a defined order, of α-amino acids. Hence depending on the number of amino acids, peptides are called di-peptides, tri-peptides, oligopeptides, etc. Proteins are multi peptide chains.

Small amino acid chain peptides (such as contained in Laminine), commonly known as oligopeptides, are very easily transported through the intestinal, membrane. They are sometimes used as transport mechanisms for drugs.

Protein must be broken down to smaller and smaller peptides, and eventually an amino acid to perform its functions. Dietary intake of peptides and amino acids,which can reach their destination, therefore, can be extremely beneficial.

Peptides are the most abundant compounds in the hypothalamus of the brain, and perform vital functions of communicating sensory impulses to the endocrine system (hormone producing glands). Peptide based hormone-releasing agents from the hypothalamus use the anterior pituitary to signal the thyroid gland, the adrenal cortex, the mammary gland, the ovaries & testicles and the growth hormone.

Understanding the mechanisms of the effect of peptides, and the types of peptides is a complex field, and is being studied extensively. Unfortunately, these studies are done in isolation and disregard the wholistic picture of the complex mechanisms, which exist in our marvelous bodily electrochemical system. Further, the studies are focused on a

particular amino acid, peptide or other neurotransmitter. While the results identify the final activity with the amino acid/peptide, the mechanism of transport of such critical amino acid/peptides to the final destination is a subject of major arguments. These arguments cast a shadow on the importance of nutritional supplements. Most doctors will tell you that nutritional supplements "cannot hurt", but stop short of endorsing them. The reason is the lack of evidence that the active ingredients have been formulated in the correct form, that is, intermediates or ligands that can make the active ingredient available to the nervous or endocrine system of the brain.

What exactly is PESE, and how much is known about it's benefits?

Proto Embryonic Stage Extract is the name we have given the ingredient in Laminine that is derived from the partially incubated (9 days) fertilized hen eggs. PESE contains the most potent and balanced combination of not only amino acids in short peptide chain form, but also other known (and unknown) factors such as Fibroblast Growth Factor. We believe amino acids (in the form of di and tripeptides) derived from such fluids combined with the growth factors are able to enhance brain function because they are "precisely" engineered to support the most complex stage of birth of a living creature, the beginning; just like the take off is the most complex function in flying an airplane, or the foundation and construction is the most complex function in the life of a building.

The health benefits of the hen egg have been known for centuries. Recently, further investigation of the mechanism of the development of an embryo in an egg during incubation revealed the scientific equivalent of the "miracle of life". In earlier studies, whilst monitoring weight gain of the embryo during the incubation period, scientists (1) found very little gain in the first 9-10 days (7.5%), and then a sharp increase (1190% by end of incubation), suggesting rapid development of a body. The potency of the nutrients available to the embryo at this stage has always been assumed to be high, but it was only recently that the chemical structure of the original egg solids for these critical stages was obtained. During the blastodermal to protoembryonic stages of embryogenesis, oligopeptides with small molecular weights were identified. These short chains of amino acids are able to cross the digestive barrier without breaking down or changing the ratios and proportions (5). Peptides are far more potent than other neurotransmitters, requiring only small amounts to produce a profound effect.

Additionally, the uptake of the Fibroblast Growth Factor (FGF) (present in PESE) by the embryo sharply increases between days 11 & 12. These embryonic peptides and the FGF have been isolated through a patented process (US Patent 5,641,517) precisely at the right stage of incubation, extracted and freeze dried to bring the "miracle of life" benefits to humans.

Extracting PESE before the peptides and FGF are "used up" to build organs and bones, allows us to provide this building, repairing, maintenance mechanism of perfectly

balanced amino acids, peptides and growth factors to humans.

How is FGF helpful to humans?

The precise blend of oligopeptides may be seen as building blocks, without a bridge, or a director. The role of such a director is fulfilled by a growth factor known as the Fibroblast Growth Factor, or FGF. FGF is prolific in PESE, as well as in the human placenta. On the 11th day of the incubation cycle of a chicken egg, the embryonic tissue shows a steep increase in the FGF, with the appropriate peptides to form the solid organs and bones (A1). A detailed day-by-day study was performed in 1988 (A4, A11). Discovered only in the seventies, and also a peptide, this FGF is critical in the development of embryos, including humans. However, it is not found to be circulating in the human adult bodies.

FGF is responsible for building the linings in the blood vessels, creating the infrastructure for the nutrients to flow to critical areas of the brain and organs. Research credits FGF with the potential to directly affect many neuro disorders because of clear results of the ability of FGF to affect the growth of neurites (A2). Neurites are signal senders (Axons) and signal receivers (dendrites) attached to the brain neurons.

Research (A7) has also shown clearly that new cell cultures show a dramatic increase in peptide and amino acid uptake in the presence of FGF. This result gives credence to the hypothesis that embryonic growth is influenced by a very precise mechanism, which combines unique combinations of amino acids, peptides and FGF.

Since FGF is not circulating in adults, multiple research projects on the effects of FGF serums to cure neuro disorders have been carried out.

Fundamental to the research is the fact discovered by Altman, J. in 1962 (A26) that neural STEM cells are formed by the body in response to abnormalities, and are resident in certain zones of the brain. The brain is therefore ready to repair the damage, and these cells have shown to differentiate into a wide range of neurons (A27). Neurons derived from such neural stem cells are capable of migrating to various regions of the Central Nervous System. Over a decade of work, both in vivo and ex vivo has revealed that exposure to such neural stem cells to FGF permits direct differentiation into the required neural cells (A14, A25).

What else is added to PESE and what benefits does that provide?

To the PESE, we add two important sources of targeted amino acids.

Adding specific, targeted vegetable protein ingredients: Vegetable protein, specifically certain legume proteins, have an essential amino acid profile, which is very close to that of the ideal protein for human nutrition (FAO/WHO 1985 and 2002). For Laminine, a patented process further isolates such a protein to eliminate the compounds, which neutralize the benefits of the essential amino acids. The result is an ingredient, which is high in Glutamic acid, (further enhancing the cognitive function of the brain), branched chain amino acids (to counter insomnia), Lysine (to control release of serotonin, controlling moods) and Arginine (promoting NO and growth hormone formation).

Adding Marine Protein: The high levels of Glycine in the specially extracted marine protein, combined with a significant amount of hydroxyproline to stabilize the glycine, makes it a primary candidate for brain food. By itself, Glycine is a neurotransmitter and an important co-component in memory function, along with glutamate, the salt form of glutamic acid (see vegetable protein above).

Health Benefits of Laminine

Mood Enhancement, controlling depression:

Some 20 million people around the world suffer from depression severe enough to be prescribed medication. Depression is caused by many external factors, including stress. In the brain, the serotonin uptake and release mechanism is affected. Laminine contains the amino acid Lysine; derived from PESE and the vegetable protein. The combination delivers a higher level of Lysine than either ingredient by itself. Lysine is known to regulate serotonin levels in the brain.

Fatigue & Energy:

Laminine combines the Leucine and Isoleucine (known as branched chain amino acids) from the PESE with an added dose from the vegetable protein extract. Leucine and Isoleucine provide ingredients for the manufacturing of other essential biochemical components in the body, some of which are utilized for the production of energy, stimulants to the upper brain and helping you to be more alert.

Memory:

Memory function is controlled by a well-balanced joint effect of glutamate (salt of glutamic acid) and Glycine. The most pronounced effect of artificial sweeteners and MSG is to interfere with this synergistic performance. We therefore decided to address this issue in the Laminine formulation.

Both these amino acids act together to play a critical role in the ability of two neurons to connect, a cellular mechanism for learning and memory. PESE is low in these amino acids. Therefore, Laminine enhances the levels by the addition of isolated vegetable protein to provide extra glutamic acid and with marine protein extract to provide extra Glycine.

PESE is used to provide the FGF in the aid of memory. FGF is known to build neurites, the bridges between the neurons and the receptors/transmitters of signals. Research shows FGF also inhibits and destroys mutant protein genes, in this case, quite possibly blocking the genes responsible for memory loss.

In 1962, it was discovered that that neuro stem cells reside in certain parts of the brain, when there is a malfunction. It is also proven that FGF feeds and nurtures these stem cells to help heal any scarred tissue. Lately, compelling arguments have been made to inject FGF directly to cure Huntington's disease, Schizophrenia, OCD and Autism.

The synergistic effect of building the neurites, nurturing the stem cells, having the most relevant amino acids and factors to guide where the amino acids are to go makes Laminine perform extremely well in memory enhancement.

Cardiovascular Health, Libido Enhancement:

The PESE and Vegetable protein provide a very potent dose of Arginine. Arginine is a precursor of nitric oxide, which is one of the few gaseous signaling molecules known, playing a role in a variety of biological processes. The (inner lining) of blood vessels uses nitric oxide to signal the surrounding smooth muscle to relax, thus resulting in increased blood flow. Effects include modulation of the hair cycle, and increased libido (through its ability to increase blood flow). Sildenafil Citrate, popularly known by the trade name *Viagra*, stimulates erections primarily by enhancing signaling through the nitric oxide pathway in the penis.

NO is also known for growth hormone formation, increasing defense of the organs against effects of aging.

Skin and Hair:

PESE contains Cysteine, which is a precursor to glutathione, a powerful anti oxidant receiving much attention nowadays for healthier looking skin. The added potent dose of Glycine, (another precursor to glutathione) from our marine protein further enhances the anti aging effect of glutathione.

Glycine from the marine protein also builds collagen, making the skin look healthier and less wrinkled.

What is the recommended dosage of Laminine?

We recommend 2 tablets, twice a day for the first two weeks, and 1 tablet, twice a day thereafter.

How is the PESE potency assured?

The PESE used in Laminine is derived from eggs, which come from free-range hens. There is no confinement or other stressful environmental factors, which affect the natural path to the essential life giving ingredients.

Is there any significant cholesterol in the PESE?

No. The egg consumes all the cholesterol during the protoembryonic and early stages. The PESE is derived from egg whites, not yolks.