

Benefits of some Nutrients found in Barley

Category	Nutrient	Benefit
Proximates	Crude Fiber	Crude fiber underestimates true fiber and is the most unsatisfactory principle of Proximate Analysis (often replaced by Detergent Fiber System). Fiber is indigestible material that stimulates the intestines to peristalsis (involuntary contraction). Increased insoluble fiber (crude fiber) in ones diet correlates with better protection against heart disease, softens stool effectively treating constipation, is linked with reducing risk of colon cancer, and fills the stomach reducing appetite leading to weight loss. Soluble fiber lowers cholesterol and blood sugar levels in people with diabetes. Increased soluble fiber in the diet decreases the body's need for insulin.
	Crude Fat	Fat is essential to provide energy and support growth. See schedule #5 re fats. Fats and oils (difference is melting points) are simple lipids that are esters of glycerol and fatty acids.
	Ash	Foods are of two types, acid or alkaline, when referring to the ash value of a food. Ash value is the type of residue that remains after the food is digested. The body functions best with an internal chemistry being slightly alkaline. The more acid the cells become the sicker we are and feel. Our bodies produce acid and need alkaline to neutralize acid. We must supply alkaline from outside sources. The main determining factor of alkaline is the organic minerals. Sprouted grains have higher alkaline ash value. Ash is what is left after all the organic nutrients have been burned off and it contains all the mineral elements jumbled together. Ash is not very useful as a measure, but is used to calculate Nitrogen-Free Extract
	Crude Protein Available Protein Soluble Protein Available Insoluble Protein	Crude protein is the total protein available in a food. Protein is essential for our growth (including bone growth) and is needed to manufacture hormones, antibodies, enzymes and tissue such as muscle. See schedule #5 re Protein
	Acid detergent fiber	Acid detergent fiber (celluloses + lignin) can better predict the digestibility of grains than crude fiber. Acid detergent insoluble nitrogen is the nitrogen remaining in the acid detergent fiber and ADIN-protein is the protein remaining in the acid detergent fiber. All proteins contain 16% nitrogen. The lower the ADF, the higher the digestibility or available energy.
	ADIN (protein)	
	ADIN (nitrogen)	
	Non-structured carbohydrates	This represents the highly digestible carbohydrate fraction. Carbohydrates provide fuel for the body. They are especially important for the brain and central nervous system for cellular recognition and communication. See schedule #5 re carbohydrates.
	Nitrogen Free extract	This is a very misleading name indeed as this fraction has nothing to do with nitrogen and is not an extract either. NFE represents the soluble carbohydrate of the food.
	Total lipids	Lipids are various substances that with proteins and carbohydrates constitute the principal structural components of living cells. They are grouped together on the basis of their relatively insolubility in water and solubility in non-polar solvents. The four types of lipids are: Fatty acids (saturated, unsaturated), Complex Lipids (lipoproteins, glycolipids), Glycerides (neutral, phosphoglycerides), and Nonglycerides (sphingolipids, steroids like cholesterol, waxes).
Minerals		Minerals are needed for the body fluids, for blood, for bones, for healthy nerves, and to regulate muscle tone, including those of the heart.
	Calcium	A metallic element of the alkaline earth group (bone protector, helps nerve cells communicate, helps muscles contract, helps blood clot, appears to lower blood pressure and helps prevent colon cancer and PMS).
	Phosphorus	With calcium builds bones and teeth. Needed for metabolism, body chemistry, and nerve and muscle function.
	Magnesium	A metallic element that maintains bones, helps muscles relax, and activates enzymes needed for energy.
	Potassium	A metallic element of the alkali metal group that is an electrolyte that maintains the body's fluid levels, helps regulate blood pressure and heart function, and helps in making of protein.

	Salt	A crystalline compound NaCl that consists of sodium chloride. It is an essential nutrient in the diet of humans. It is essential for life. One of salt's major functions is to regulate blood volume and pressure.
	Sodium	An element of the alkali metal group (helps fluid balance, helps acid-base balance, helps transmitting of nerve impulses)
	Copper	A metallic element (helps transport oxygen, used to make hormones)
	Iron	A metallic element (important for production of hemoglobin – the part of the red cell that carries oxygen)
	Manganese	A metallic element (works with enzymes to help with many cell processes)
	Zinc	A metallic element that is an essential micronutrient for animals. It strengthens the immune system and supports reproduction (helps sperm develop and is needed for ovulation and fertilization). Zinc activates enzymes for many important functions (production of insulin).
Vitamins		Vitamins are organic molecules that function in a wide variety of capacities within the body. Their most prominent function is as cofactors for enzymatic reactions. They generally cannot be synthesized by the body and therefore must be supplied in the diet.
	Thiamin	It is important for energy metabolism, nerves, and tissue; and muscles depend on Thiamin.
	Riboflavin	Riboflavin is used in energy metabolism, healthy skin, and supports vision.
	Niacin	Niacin is used in energy metabolism, healthy skin, the nervous system and the digestive system.
	Pantothenic Acid	Pantothenic Acid is used in energy metabolism. It is needed to manufacture adrenal hormones and chemicals that help regulate nerve function.
	Vitamin B-6	B-6 is used in amino acid and fatty acid metabolism. It helps form red blood cells and is necessary for a healthy nervous system.
	Folate, total Folate, food Folate, DFE	Folate helps form new cells.
	Vitamin B-12	B-12 builds genetic material and helps form red blood cells and nerve sheaths.
	Vitamin A, IU Vitamin A, RAE	It is used for healthy eyes, skin and bones and for hormone synthesis.
	Vitamin E (alpha-tocopherol)	Vitamin E works as an antioxidant and also stabilizes cell membranes. It helps form red blood cells, muscles and other tissue. It preserves fatty acids.
	Vitamin K (phylloquinone)	Vitamin K is important in blood clotting.
		Vitamin C
Amino Acids		Twenty amino acids are needed to build the various proteins used in growth, repair, and maintenance of body tissues. Eleven are made by the body (nonessential): arginine, alanine, asparagine, aspartic acid, cysteine, glutamine, glutamic acid, glycine, proline, serine, tyrosine. Nine must come from diet (essential): isoleucine, leucine, lysine, phenylalanine, threonine, tryptophan, valine, histidine.
	Alanine	A simple nonessential amino acid that supports prostate health.
	Amino butyric acid	A natural calming and anti-epileptic agent in the brain that is manufactured from the amino acid glutamine and glucose.
	Arginine	A basic amino acid that has a role in assisting wound healing, removing excess ammonia stimulating the immune function, and promoting secretion of several hormones (growth, insulin)
	Cysteine	A crystalline amino acid that is a major metabolic sulfur source that helps maintain the structure of proteins in the body.
	Glutamic acid	An amino acid that is the most common excitatory (stimulating) neurotransmitter in the central nervous system.
	Glycine	A sweet crystalline amino acid obtained essentially by hydrolysis of proteins. It is present in considerable amounts in the prostate fluid and may play a role in maintenance of the health of the prostate.

	Histidine	A semi- essential amino acid that is a precursor of histamine – a compound released by the immune system cells during an allergic reaction.
	Isoleucine	An essential amino acid isometric with leucine that plays a role in the maintenance of muscle tissue and preservation of glycogens stored in the muscles. It prevents muscle break down during exercise.
	Leucine	An essential amino acid that plays a role in the maintenance of muscle tissue and preservation of glycogens stored in the muscles. It prevents muscle break down during exercise.
	Lysine	An essential amino acid needed for growth and to help maintain nitrogen balance. It helps the body absorb and conserve calcium.
	Methionine	A sulfur-containing essential amino acid supplies sulfur and other compounds required by the body for normal metabolism and growth. It helps the liver process fats.
	Phenylalanine	An essential amino acid that is converted to tyrosine – a phenolic amino acid that is a precursor of several important substances (e.g. epinephrine – a basic hormone also called adrenaline that is the principal blood-pressure raising hormone secreted by the adrenal medulla and is used as a heart stimulant, vasoconstrictor controlling hemorrhages of the skin and a muscle relaxant in bronchial asthma) Phenylalanine appears to elevate mood and also appears to influence certain chemicals in the brain that relate to pain sensations.
	Proline	An amino acid that can be synthesized from glutamate.
	Serine	An essential amino acid that occurs especially as a structural part of many proteins.
	Threonine	An essential amino acid
	Valine	An essential amino acid that is one of the building blocks of plant and animal proteins. It also plays a role in the maintenance of muscle tissue and preservation of glycogens stored in the muscles. It prevents muscle break down during exercise.
Fatty Acids		Over seventy fatty acids have been discovered in nature. They are important for a wide array of cell structure components and for many chemical reactions in the body including energy and hormonal activities.
	Linoleic	An unsaturated fatty acid essential for nutrition. Omega –6 fatty acids are derived from linoleic acid.
	Linolenic	An unsaturated fatty acid Omega-3 fatty acids are derived from linolenic acid. Omega-3's are used in formation of cell walls and improve circulation and oxygen uptake with proper red cell function.
	Oleic	A monounsaturated fatty acid. Omega-9 fatty acids are derived from oleic acid.
	Palmitic	A saturated fatty acid
	Stearic	A crystalline fatty acid
Other	Carotene, beta	This carotenoid protects your cells from damaging effects of free radicals (preventing cancer and heart disease). It boosts immunity and helps the reproductive system function properly.
	Lutein + zeaxanthin	These carotenoids defend cells from the damaging effects of free radicals and protects the eyes from developmental age-related macular degeneration and cataracts.