

A road map to Agriculture, Nutrition and Health

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Man is crippled in Evolution. Human Genome Project has revealed that he has only 19 thousand genes. Plants have over 50 thousand genes¹. They can synthesize all vitamins and amino acids and the two omega fatty acids that we can't. Therefore, the dependency. Plants fix carbon dioxide synthesize our food, using solar energy, evolve oxygen. We breath oxygen to live and inevitably produce free radicals, responsible for disease and death. Vegetarian food, depleted of oxygen, rich in antioxidants are healthier².

Man lived as hunter gatherer for nearly 10 lakh years and only recently, 10 thousand years ago shifted to agriculture. His genes have been conditioned for hunter-gatherer's life style for very long time. and in last 200 years he has further added processed food in his lifestyle³.

Today we have very clear knowledge of the limitation of our dynamic body and its finite needs of bulk food, carbohydrate, protein, fat. and essential micronutrients, vitamins, amino acids, omega fatty acids. But the tragedy is that we irrationally grow crops and feed our population with very high carbohydrate rich, protein poor agriculture-produce to feed our masses. The most telling effect on our health has been because of excessive intake of omega-6 fat and the paucity of omega-3 fat in our diet³. Man as hunter gatherer consumed less fat and equal amount of omega-6 and omega-3 fat for very long and today suddenly started consuming more fat that too lots of omega 6 fat and very little omega-3 fat. Omega-6 is inflammatory and omega-3 is anti-inflammatory. This disease prone dominance of inflated inflammation in human body is largely responsible for the recent rise in several noncommunicable disease⁴ (Figure 1).

Innovative FLAX BIOVILLAGE concept⁵ has been developed by us, to enrich egg⁶ and milk⁷ Chicken meat⁸⁻¹⁰ and other food products¹¹ attain omega-3 nutritional security, to combat Non-communicable disease.

Linseed is a very rich source of alpha-linolenic acid (ALA) the primary, the essential omega-3 fatty acid. Eicosa-pentataenoic (EPA) acid and Docosahexanoic (DHA) acid are derivable omega-3 fatty acids from ALA, in human body and readily obtainable from fish. However, it is predicted that global warming will reduce the de novo synthesis of DHA by algae and hence it will reduce the DHA transferred to fish. Therefore,

and land resources of omega-3 fatty acids, the aquaculture and linseed agriculture constitute, a sustainable source omega-3 fatty acid. Alpha-linolenic acid (ALA) is the major form of ω -3 FA available to vegetarians, and therefore must meet the requirement of EPA and DHA adequately¹²

For validation of the Flax Bio-village concept, we have established a linseed processing unit, which directly procures the high omega authentic PKV.NL.260 linseed variety. Omega-3 oil is cold press extracted from linseed under nitrogen. Omega-3 oil is also converted to soft gel. Omega-3 oil is converted into micro-emulsion, by a specially designed plant and processed in a clean room. Omega-3 emulsion is fully miscible with water, contains necessary additional nutritional ingredients to stabilize omega-3 in the emulsion and make it better bioavailable. It can fortify any food products including milk, other dairy products, sweet chocolates.

Linseed cake which has about 5% omega-3 fatty acid, low carbohydrate, good protein, high dietary fiber is used as flour mix. Cake can be processed to make omega-3 enriched feed mix to get omega-3 egg and omega-3 chicken.

All these efforts are meant to take omega-3 fatty acids in a readily edible form to every home and correct the severely skewed omrga-6 to omega -3 ratio.

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