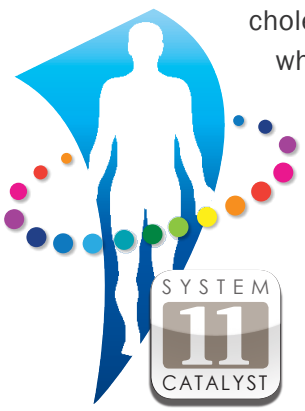
CLINICAL OBSERVATIONS

Understanding Cholesterol and Its Clinical Implications

TRANSFORMATION

Most of us at some point in time have had our cholesterol levels tested. For many years the total cholesterol (TC) value was the only number we really paid attention to. If the value was slightly greater than 200, we might be concerned. If it was well over 200, we were prescribed a medication and told to stop eating eggs and red meat. Our assessment and evaluation has changed tremendously in the past several years. This article will help explain what cholesterol does in your body, how it gets out of balance, and what you can do to maintain a desirable lipid profile.

Cholesterol and its components are not all bad. I think it is the balance that we need to focus on. Our total cholesterol, high or low, is a significant indicator of our potential for health. When too high, it points to heart disease. When too low, it can give us insight into other health conditions. However, we also know it is not just the TC that is important. We must also consider Triglycerides (TG), High Density Lipoproteins (HDL), Low Density Lipoproteins (LDL) and their relationship with each other. This is why it is important for us to be familiar with these terms and understand what cholesterol and Lipoproteins are and what they do in the body.



CHOLESTEROL is a fatty substance found in all animal tissue. It is not considered an essential dietary nutrient since it is made in the body by the liver. However, it is essential in the sense that it serves several very important and necessary functions for us. Cholesterol is:

- converted into bile to assist in the digestion of fat
- part of every cell membrane in our body, helping to maintain the cell's structure and function
- necessary in the manufacture of steroid hormones

TRIGLYCERIDE is a lipid made of three fatty acids combined with a glycerol molecule. They are also used to make up the lipid bi-layer of cell membranes and when stored as fat help insulate our body, protect our organs and provide energy. High TG's in the blood reflects our intake of dietary fat sources such as French fries, chips, ice cream, desserts and alcohol, to name just a few.

LIPOPROTEIN is a *carrier* of fat and cholesterol in the blood stream. It consists of fat, triglycerides, protein and cholesterol. There are "good" and "bad" lipoproteins.

LOW DENSITY LIPOPROTEIN (LDL) These carriers of fat are made mostly of cholesterol and are deemed the "bad" cholesterol because they transport out to our tissues and organs. When LDL levels are high, the risk for coronary heart disease and strokes is also high. The LDL is most reflective of our diet.

HIGH DENSITY LIPOPROTEIN (HDL) Made mostly of protein, this lipoprotein carries cholesterol from peripheral tissues and transports it back to the liver for recycling. This is the "good" cholesterol. HDL is positively affected by diet and exercise.

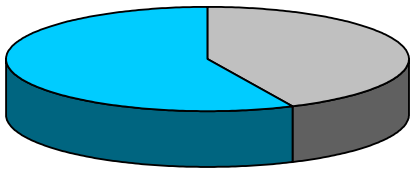
Lisa Helffrich, RD, is a graduate of the University of Texas-Austin and is Director of Education and Technical Support for Transformation Enzyme Corporation.

CLINICAL FINDINGS: Lipid Profile Results within the 1st month

In the Transformation Enzyme Therapy Clinic, we use a device called the Cholestech to very easily and quickly test Total Cholesterol, Triglycerides, Glucose, LDL, HDL and TC/HDL ratios. In a random chart review of 75 client records, 44 clients had been tested for lipid profile levels. Nine charts were omitted from analysis because of inconsistency in fasting/non-fasting results. Therefore, 35 charts in all were reviewed and this particular group was non-fasting. Compliance to diet, exercise and protocol was encouraged but not strictly monitored. While many charts had more than 2 lipid profiles done, this review looked at only the 1st and 2nd tests with a variance of 2-4 weeks in between each test. What we found was the following:

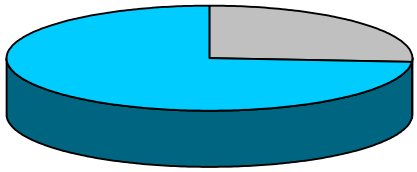
TRIGLYCERIDES (TG's)

- **57% showed improvement in TG levels**
- Note: 12 with TG levels greater than 150 showed significant improvement (Initial TG average was 255; 2nd TG average was 153)



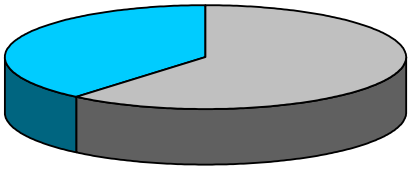
TOTAL CHOLESTEROL (TC)

- **74% showed improvement**
- Note: 14 with TC levels greater than 200 showed a lowering of TC on second test (Initial group TC average was 229; follow-up avg. was 194)



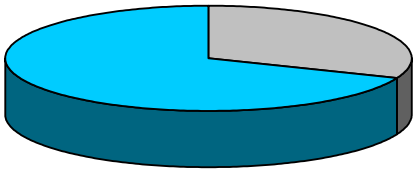
HDL ("good" cholesterol)

- **39% showed a desirable increase in values**



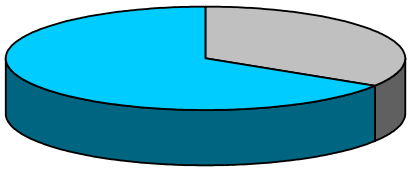
LDL ("bad" cholesterol)

- **69% showed a desirable decrease correlated to TC decrease**



TC/HDL Ratio

- **66% showed a favorable decrease in risk ratio** (beginning average 5.26; follow-up average 4.2)



These results are very consistent whit those reported by the practitioners we work with on a daily basis and illustrate the positive effects that enzyme therapy can have on balancing and improving lipid profiles.

DESIREABLE TEST RESULTS

These numbers are based on the American Heart Association guidelines as well as Transformation's clinical experience and professional opinion. It is very important to look at the patient's total picture as well as lipid values and their relationship to one another.

Total cholesterol	< 200* mg/dl
Triglycerides	< 150 mg/dl
LDL	< 130 mg/dl
HDL (Men)	< 40 mg/dl - increased risk for heart disease
	> 50 mg/dl - protective against heart disease
HDL (Women)	< 50 mg/dl - increased risk for heart disease
	> 60 mg/dl - protective against heart disease
LDL/HDL ratio	2:1
TC/HDL ratio	5:1 - low risk
	3:1 - optimal

*A higher number may be acceptable if HDL/LDL and TC/HDL ratios are acceptable. TC < 140 may reflect imbalances in steroid hormones, poor cellular integrity or an inability to properly digest fats.

CASE STUDY: Cholesterol

Carmen is a 54-year-old woman who came to Transformation's Enzyme Therapy Clinic in November 2002. She had high cholesterol and had recently gained 15 pounds, so she was ready to make some healthful changes in her life. After going through the evaluation program, it was determined that Carmen's body type was Para, which meant that she needed to reduce the carbohydrates in her diet and increase protein consumption.

Despite her love of breads, pasta, and potatoes, she was more than willing to make the necessary dietary changes. She began to eat toast with peanut butter and soymilk for breakfast, and had plenty of good protein for lunch and dinner, such as chicken and eggs.

Along with her dietary changes, Carmen also began taking enzyme supplements. She incorporated a basic enzyme protocol of TPP Protease, TPP Digest, and Plantadophilus into her daily regimen along with BalanceZyme Plus to help curb her cravings and support fat digestion. Despite not being able to establish a consistent exercise routine, Carmen was still able to see great results from the changes she made.

Within 2 months, she had lost a total of 13.5 lbs and her cholesterol improved dramatically. Her triglycerides dropped 44% from 265 to 148 mg/dL (just above normal range) and her total cholesterol dropped 32% from 241 to a healthy 165 mg/dL.

Suggestions for Improving Your Lipid Profile: Diet, Exercise, Lifestyle, and ENZYMES!

1. Choose lean meat, fish, and skinless poultry (baked or broiled)
2. Choose "healthy" fats in moderation (nuts, seeds, olive oils, avocadoes, eggs)
3. Avoid "full fat" dairy (ice cream, cheese, whole milk, half & half, cream), high fat or fried meats, and tropical oils
4. Increase intake of soluble fiber found in fruits, vegetables, grains, and legumes
5. Increase physical / aerobic activity
6. Do not smoke
7. Maintain desirable weight for your height

Despite a 26% decrease in HDL, Carmen's level remains in optimal range while her LDL improved by decreasing 29%. Although her TC/HDL ratio started at an acceptable 3.65, this also decreased to 3.36 and Carmen hopes to continue these improvements. She has removed the BalanceZyme Plus from her protocol but has added LypoZyme for continued cholesterol success.

"I felt a cleansing going on in my system," Carmen says in describing the extreme changes she felt upon beginning her protocol. "I was able to get rid of the gas and I can tell that I'm digesting and assimilating everything that I eat . . . even the carbohydrates that have always been problematic for me."

Cholesterol Q & A

Dr. DicQie Fuller-Looney

My patients with elevated cholesterol often ask me about cholesterol-lowering medications and their negative side effects. Can you elaborate on how diet, exercise, and a more natural approach to lowering cholesterol is important?

To date, I am not aware of anything that can replace the health benefits of a good diet and exercise program. In a sense, enzyme therapy "multiplies" these benefits and even goes one step further by supporting the liver's function of regulating and maintaining a healthy lipid profile. Although traditional cholesterol-lowering medications affect the liver, they do so in a degenerative way, thus the unpleasant side effects. Enzyme therapy, on the other hand, assists and supports the liver's function. Does that make sense?

If my patients are on other medications, can they still take digestive enzymes?

Absolutely. Digestive enzyme supplements do not interfere with or negate medications. If anything, enzyme therapy will assist the liver to "deal with" those drugs and properly eliminate them from the system once they have done their job.

I see that you have several products which might help my patients with their triglycerides and cholesterol problems. Could you explain these to me?

We have both digestive and support products that I use for balancing lipid profiles. **TPP Digest** is our most comprehensive digestive enzyme formula containing therapeutic amounts of lipase. I normally suggest two capsules with each meal for this condition. The idea is to properly break down triglycerides (lipids), carbohydrates

for balance of glucose and proteins for proper amino acids. This condition also creates poor fat-soluble vitamin absorbability, and TPP Digest has the added benefit of helping deliver fat- and water-soluble nutrients to the cell.

TPP Protease is a therapeutic systemic product, often taken between meals to assist the liver in regulating the lipoproteins. This is also a core product for this condition because of its many other overall health and immune system benefits.

TPP Probiotic should be taken before bed. This carefully mixed selection of friendly microorganisms for the GI tract will help stabilize and maintain a healthy intestinal ecosystem. Until the body's imbalance is taken care of, the possibility of opportunistic organisms causing problems such as prostate or breast cancer is a possibility.

TPP Lypo is a support product containing enzymes and herbs, which is taken between meals for additional support if you are trying to get the patient off of cholesterol-lowering medication.

I am seeing more and more patients with low cholesterol. Is this a health concern?

Evidence suggests low cholesterol alters the way brain cells function, with fewer than normal receptors for mood-elevating neurotransmitters, and this may lead to increased risk of suicide, impulsivity, aggression, depression and anxiety. Researchers suggest low levels of lipoprotein is associated with certain types of cancer and there is always the concern that low cholesterol creates a loss or imbalance of steroid hormone production. There is speculation that certain medication and a decrease of omega fatty acids only add to this risk.

DicQie Fuller-Looney, PhD, DSc, ND, is Founder of Transformation Enzyme Corporation and creator of the BioDezyne Clinical System.

ENZYME THERAPY: Hyperlipidemia (High Cholesterol/Triglycerides)

Hyperlipidemia is the presence of elevated levels or imbalances in total cholesterol, LDL, HDL, and/or triglycerides in the blood above and beyond what is considered necessary and healthy.

The enzymes Lipase and Protease are the most important and influential when trying to improve and maintain a healthy lipid profile. Put simply, Lipase breaks down lipids and triglycerides while Protease breaks down proteins. When taken with meals and between meals, they assist the liver to balance and regulate blood lipids.*

The following recommendations have proven successful in the Transformation Clinic:

- 1-2 **TPP Digest** (or 2 **DigestZyme** and 1 **LypoZyme**) with every meal
- 2 **TPP Protease** (or 3 **PureZyme**) and 1 **TPP Lypo** between meals
- 2 **Probiotic** (or 3 **Plantadophilus**) at bedtime

Support products may vary greatly depending on individual needs and are not limited to the following. Please refer to our catalog or visit www.transformationenzymes.com for a complete listing of products.

- **Protease IFC**, **Antioxidant**, **Vitamin C Complex** to minimize free radical damage and risk for clot formation*
- **EFA 1200mg**, **BioΩZyme** to support healthy lipid balance*

Nutritional Recommendation: Follow a diet that is appropriate for your Body Type.

Transformation's goal is to make nutritional recommendations that assist individuals to achieve a healthy balance. Dosages may vary depending on need, i.e., lower dose for maintenance, higher dose for therapy. See Practitioner's Guide or individual product pages for suggestions. For more information about the Cardiovascular System and to review other protocols, please contact Transformation or visit our website.

*These statements have not been evaluated by the FDA. These products are not intended to diagnose, treat, cure, or prevent any disease.

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