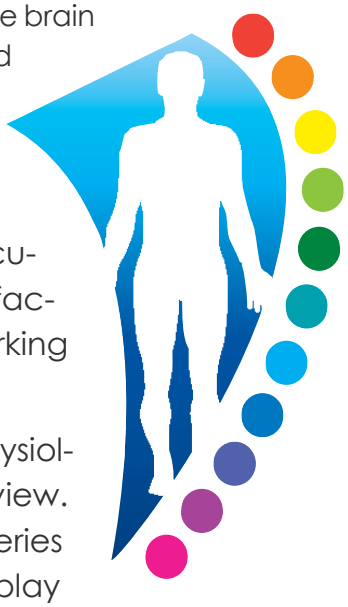
TRANSFORMATION

A Nutritional Approach to

URINARY HEALTH

"Bones can break, muscles can atrophy, glands can loaf, even the brain can go to sleep without immediate danger to survival. But should the kidneys fail, neither bones, muscles, glands nor brain could carry on." – Dr. Homer W. Smith, *From Fish to Philosopher*



As I progress through our educational series on the 11 Systems of the body, I am continually amazed by how miraculous the human body truly is. All of our cells are individual factories working within organs that form a system, and all working together to keep us alive and well!

As I have said, my intent is not to re-teach anatomy and physiology – we can all dust off our old textbooks if we want a review. Rather, my goal for Transformation's System 11 Catalyst series is to teach the important roles that nutrition and digestion play in the health of each system, and ultimately their importance to overall health. Let's focus on how enzymes support the optimal function and health of the kidneys and urinary system.

The System in a Nutshell... *or should I say Kidney Bean?*

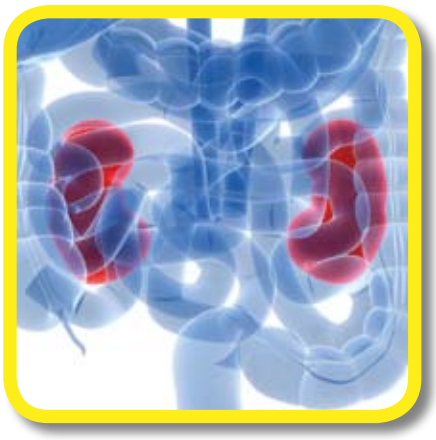
The urinary system consists of the kidneys, ureter, bladder and urethra. In terms of its parts, it is one of the more "simple" systems, however the tasks it performs are in no way simple! The kidneys are responsible for:

- continually filtering the blood through its intricate network of nephrons, glomeruli and tubules
- regulation of blood volume via absorption and excretion of electrolytes
- regulation of blood chemistry, i.e., acid-alkaline balance
- production of urine and the elimination of waste
- production of the enzyme renin, which helps regulate blood pressure
- production of the hormone erythropoietin, which simulates production of red blood cells in the bone marrow

Achieving Balance with Digestive Enzymes

The urinary system has a daunting task, that's for sure. The ureter, bladder and urethra are also responsible for collecting, holding and excreting the waste products in the urine. It is constantly filtering our blood, communicating with the other systems and assessing what to keep and what to discard, all the while striving for balance. So what can we do to make this task easier, more efficient and less stressful on the kidneys day-in and day-out?

In our discussions of the Cardiovascular System, we talked about the health of the blood. What we eat, how well we digest it and how well we eliminate what is not needed ultimately affects our health. Well, now we can see the kidneys play a huge part in managing the content of the blood. Every ounce of blood enters the kidneys via the renal artery and exits via the renal vein at least 350 times a day. Water, glucose, amino acids and sodium are reabsorbed while metabolic by-products, excess fluids, toxins and drugs are excreted during this filtering process.



Detoxification - The kidney's role in detoxification involves the removal of toxins, chemicals and metabolic wastes. Urea, uric acid and creatinine are the three most common nitrogen-containing (protein-derived) wastes found in the blood. Urea is a by-product formed from protein metabolism, uric acid is a by-product of nucleic acid metabolism and creatinine is a result of creatine metabolism in muscles. Obviously we cannot avoid metabolism, but we can support clearing the by- products from the body. Excessive proteins in the blood regardless of the source (dietary, metabolic waste or toxins) can pose an unnecessary challenge on the kidneys that will affect renal function in the long run. Through better digestion of proteins, carbohydrates and fats with digestive enzymes and better circulation with additional proteases, we can help alleviate this stress.

Fluid Balance - Have you ever thought about the fact that we all drink varying amounts of fluid each day and yet the total volume of water in the body remains fairly constant? The kidney's role in maintaining fluid balance is regulated by the hormones ADH and aldosterone. ADH gives the signal to conserve fluid, while aldosterone signals to reabsorb sodium and excrete potassium which increases fluid retention. The kidney's ability to reabsorb and/or excrete sodium, potassium and calcium in the proper amounts dictates the movement of water from one compartment to another and thus maintains balance. So again, optimal blood flow with protease enzymes makes sense in our efforts to help the kidneys.

Additionally, there are other nutritional factors that can influence fluid balance – better digestion of proteins, reduction of inflammation, improved cell membrane integrity for nutrient exchange and optimal cardiovascular health to name just a few. The better we manage these factors, the less stress we place on the kidneys.

pH Balance - Did you know that enzymes, hormone receptors and mitochondria are pH dependent? That means the blood pH must be maintained between 7.35 and 7.45 in order for the cells of the body to function properly. This is a very narrow range, and while respiration and sweat play a role, the kidneys are largely responsible for maintaining blood pH. While chemical buffers and the lungs can temporarily deal with excess acids/bases, these systems cannot eliminate them from the body.

Only the kidneys have the ability to eliminate acids created during metabolism, and only the kidneys can regulate blood concentration of alkaline substances. As blood pH becomes more alkaline, the kidneys excrete bi-carbonate ions and retain hydrogen ions. On the other hand, if blood pH becomes too acidic, the kidneys reabsorb bi-carbonate ions and excrete hydrogen ions. Thus, urine pH will vary greatly (4.5-8.0) and this further demonstrates the kidney's role in pH balance.

The topic of dietary modifications to restore pH balance is a big one that I will tackle at a later date. Yes, we should eat a healthy balance of whole foods (CHO, PRO, FAT) but what's more important is the ***digestion*** of those foods. If proper digestion does not take place, a cascade of events occurs that makes the balancing act for the kidneys a much bigger challenge than it has to be. Think about it – if we do not digest the nutrients completely, the blood suffers, our cells suffer, metabolism is off, fluid cannot be balanced and who knows what the pH will be!

Researching the Topic: Impaired Kidney Function

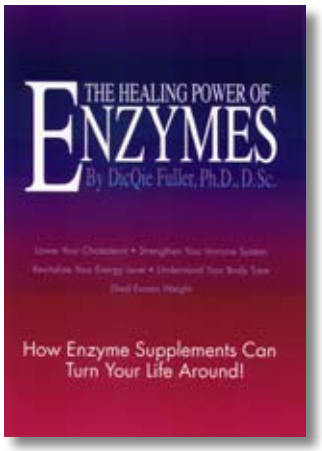
In Glomerulonephritis disease, there is a buildup of protein in the basement membrane of the glomeruli of the kidneys. Fluids must pass through this basement membrane during the initial phase of blood filtration by the kidneys.

Scientific research using an animal model of this disease "lends further support to the concept that enzymes capable of degrading immune complexes '*in situ*' can ameliorate glomerulonephritis."

Gesualdo L., Ricanati S., Hassa M.O., Emancipator S.N., and Lamm M.E. "Enzymolysis of glomerular immune deposits in vivo with dextranase/protease ameliorates proteinuria, hematuria, and mesangial proliferation in murine experimental IgA nephropathy." J Clin Invest 1990; 86: 715-722

So I ask again – what can we do to make this task easier, more efficient or less stressful on the kidneys day-in and day-out? Very simply, support digestion with TPP Digest and TPP Probiotic and promote circulation and detoxification with TPP Protease.

What We See in the Clinic



Dr. DicQie Fuller-Looney has been teaching Biochemical Individualism (Body Typing) for many years, and her book *The Healing Power of Enzymes* remains the benchmark text for customizing enzyme therapy according to genetic predisposition. One thing she has discovered is that the Supra type (Type Three) is the one with the greatest propensity for health challenges related to their kidneys. It is not surprising this is also the type who loves their protein and tends to overeat it relative to their needs or, more importantly, their ability to digest it.

We all know excess protein intake, improperly digested, over time puts a greater demand on our kidneys. This is especially true for the Supra body type. When I have determined the Biochemical Type to be Supra, my nutritional recommendations are to modify protein intake rather than omit it, and to support this type with additional protease enzymes. By making these two simple adjustments, I often see improvements in fluid balance, blood pressure and pH balance.

Bio-Impedance Assessment (BIA) is a quick and easy tool I use to not only look at fat and fat-free mass, but also fluid balance. The BIA gives me total body water, intra-cellular water (ICW) and extra-cellular water (ECW) which tells me if they are holding excess fluid. I find the body composition is extremely helpful when monitoring weight loss or gain. For example, if your patient loses 10 pounds, you can easily see if it was excess fluid or fat loss, or rather if they lost muscle, which is more than likely not desired. It also allows me to see the ratio in ICW and ECW, which gives me insight into the cell's ability to exchange nutrients and expel waste. The healthy ratio is 3:2 (which means 60% inside the cell and 40% outside the cell). I often see this ratio at 1:1, until we get them on enzymes of course!

As mentioned earlier, the pH of the blood has a very narrow variance, while the pH of the urine will swing from acid to alkaline very easily. The pH concentration of the urine is a picture of the "excess" that the body needs to eliminate in order to maintain blood pH. In the past, I used Biological Terrain Assessment (BTA) to monitor pH of the morning's first urine and saliva pH. Through dietary modifications and digestive enzymes to support digestion, circulation and elimination, I saw positive shifts in pH balance with reduced alkaline-acid "swings." This told me the

body was working more efficiently, creating less stress on the detoxification organs – in this case the kidneys. *Please see our Clinical Observations article on pH Balance for more details.*

Blood pressure is certainly a very common health concern, especially in the Supra body type, and we know elevated blood pressure can compromise kidney function in the long run. Unfortunately, I did not monitor and record blood pressure consistently enough to produce a clinical observation. However even without a chart review and stats, my overall conclusion is very predictable – improve your diet and how you digest it, then improve circulation and elimination, and the body will begin to balance. In this case, we would see a lowering of elevated blood pressure. Those of you who have used enzyme therapy in your practice have likely seen this as well.

Diabetes is also a risk factor for kidney disease that warrants attention. Poorly managed blood sugar and chronically elevated glyco-proteins in the blood can damage the kidney's filtering system. My experience with diabetes is not surprising – combine proper diet, exercise and lifestyle along with our Foundation protocol, and the results follow. I realize this can be "easier said than done," but the truth of the matter is it ***works***. In the past I have used the Cholestech to monitor glucose and the urinary dip-stick to check for protein, blood or glucose in the urine. These are quick and easy ways to monitor your patient in-house and assess 1) compliance, 2) need for protocol changes or 3) if further testing is needed.

Some of the more traditional ways of monitoring and diagnosing kidney function include looking at blood levels of creatinine and blood urea nitrogen (BUN). These are two waste products that accumulate in the blood when the kidneys are not filtering and eliminating properly. Depending on the individual laboratory, optimal levels may vary slightly, but in general creatinine should be 0.8-1.4 mg/dl and BUN should be 7-25 mg/dl. I have worked with several patients who have shared their lab work with me, and the results have shown improved kidney function.

Up Close: Clinical Case Study

One of my all time favorite success stories is that of Mr. Richard Bertuzzi. He came to the Transformation clinic in October 2005 after being hospitalized and learning that his kidneys were no longer functioning properly. His chief complaints were shortness of breath, fatigue, poor appetite with weight loss and severe edema in his lower extremities. Lab work showed creatinine well above 6 mg/dl (BUN was not provided to us).

He asked for an aggressive enzyme protocol and his compliance was very good:

- 2 TPP Digest with meals
- 2 TPP Protease with meals
- 2 TPP Protease 3 x day between meals
- L-Drain / K-Drain 2 x day
- 2 TPP Probiotic at bedtime

Take a look at Mr. Bertuzzi's results in just over 7 weeks:

	10/19/05	12/09/05	Interpretation
Weight	166	174	8 lbs desired weight gain, appetite improved
Fat	20.6	24.6	Gained 4 lbs fat
Fat Free Mass	145.4	149.4	Gained 4 lbs FFM
% TBW	64.1	63.0	He gained weight but lost excess fluid
% ICW	53.5	58.8	Fluid moved inside the cell
% ECW	46.5	41.2	Excess fluid outside the cell decreased, ratio improved closer to 3:2 or 60/40, edema was visibly reduced
Phase Angle	4.6	6.1	Improved cellular integrity
Urine PH	5.22	5.22	No change
Creatinine	6.0mg/dl	4.2mg/dl	Improved
Total Cholesterol	134	182*	Better intake and digestion of nutrients
Glucose	92	89*	Maintaining healthy blood sugar, reduced risk on kidneys

* test date April 2006

Mr. Bertuzzi began feeling better immediately. He wrote in 2006: "It is truly a miracle that my health has been restored, when doctors had basically given up hope. I am now able to drive, walk, visit friends and enjoy life again." He continues to take his enzymes and updates me on his lab work. His latest creatinine and BUN levels in 2009 were 3.12, 3.03, 3.27 mg/dl and 33, 32, 30 mg/dl, respectively. He recently came back so I could do his BCA, and he looks great and feels good. His weight is 185 lbs, %TBW is 55.5, %ICW is 57, %ECW is 43 and his phase angle is 5.5. Not bad for 81 years old! He also shared with me a few "side effects" of the enzymes – he has not had a headache or a cold in 5 years.

Enzyme Protocols and Rationale

My focus is always:

- **Nutrition** – dietary modifications according to body type
- **Digestion** – a digestive enzyme formula and probiotics to ensure optimal nutrient bioavailability and a healthy GI environment
- **Circulation and Detoxification** – proteolytic enzymes for improved blood flow, which supports all detoxification organs

These three key areas of focus supporting cellular nutrition not only lessen the overall toxic burden on the body but also strengthen the immune system and control inflammation. How can I go wrong? Digest with meals, Protease between meals and Probiotic at bedtime – that's where I start!

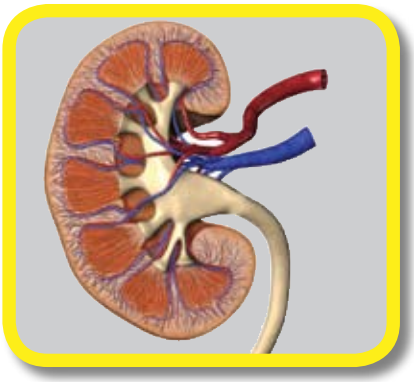
Specific to the kidneys and urinary health, supplementation with TPP Protease or PureZyme is a must. TPP Digest with meals ensures complete protein digestion, while TPP Protease between meals keeps the blood "clean," minimizing excess proteins in circulation and supporting the kidney's efforts to eliminate waste without overburdening them. Additional herbs, antioxidants and even glandular support for the adrenals have all demonstrated positive outcomes in our clinic as well.

For more information on our products or to review complete protocols for the Urinary System, please visit www.transformationenzymes.com or call 800-777-1474.

What Else Is Important?

I almost forgot to mention WATER! Water is clearly one of the most important nutrients, and yet it is also probably one of the most unappreciated. While a person can go six weeks without food, merely one week without water can be life-threatening. Remember, an adult's body weight is 55-75% water, making it the most abundant substance in the body. In fact, water is the main component of every body fluid such as saliva, blood, gastric juices and urine. Nearly every function in the human body takes place in water, requires water or produces water. Some of the many important functions of water are to:

- transport nutrients
- carry away waste
- activate enzymes
- maintain body temperature
- moisten tissues
- cushion joints
- protect organs and tissues



The benefit of water intake to the kidneys cannot be overstated. One of the main avenues of detoxification is via the kidneys and urinary output, and this cannot be effectively accomplished without proper fluid intake.

It is important to understand that estimating an individual's fluid need is based on their size and activity level as well as environmental conditions. The rule of thumb for determining individual need is: "half your body weight in ounces daily." A person's fluid needs may change based on their lifestyle and activity levels. When activity levels are increased such as with more physical work or strenuous exercise, fluid needs increase by approximately 1-3 cups per hour.

The majority of fluids consumed should be in the form of bottled or filtered water. I am often asked: "What is the best water?" That's a loaded question. In general I recommend bottled spring water with a pH at or near the pH of blood. I do not disagree with the practice of drinking "alkaline" water for therapeutic purposes, such as in cases of extreme acidity, but for long-term use I am afraid this may create another imbalance.

Additional fluids can be obtained from fruits and vegetables and their juices along with many options for healthy green teas. Beyond that, the regular intake of coffee, sodas and caffeinated or alcoholic beverages should be avoided.

For additional information or to receive assistance with your patients, please call 1-800-777-1474 or visit our website, www.transformationenzymes.com. I look forward to hearing from you soon!

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