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Lab-Report

Laboratory Number: 8002984	Patient:	Sample report
Date received: 06/09/2016		
Date outcome: 06/16/2016		Israel
Specimen: Stool		

Health-Panel	Findings	Norm	Valuation	reduc. norm elev.
Stool-Flora:				
Bacteroides	2 · 10 ⁹ CfU/g	10 ⁹ -10 ¹⁰	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Bifidobacteria	5 · 10 ⁷	10 ⁸ -10 ¹⁰	slightly reduced	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Lactobacilli	2 · 10 ⁷	10 ⁵ -10 ⁷	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Clostridia	<1 · 10 ⁶	up to 10 ⁶	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
other anaerobes	<1 · 10 ⁶	10 ⁶ -10 ⁸ ?	normal value ?	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
E.coli	2 · 10 ⁶	10 ⁶ -10 ⁷	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
E.coli-biovare	<1 · 10 ⁴	up to 10 ⁵	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Enterobacteriaceae	<1 · 10 ⁴	up to 10 ⁵	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Enterococci	3 · 10 ⁶	10 ⁶ -10 ⁷	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
other aerobes	<1 · 10 ⁴	up to 10 ⁴	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Candida	<1 · 10 ²	up to 10 ²	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Geotrichum	<1 · 10 ²	up to 10 ²	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
other fungi	<1 · 10 ²	up to 10 ²	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
pH-value	5.6	6-7	slightly acid	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Digestive residues:				
Fat	2.83 %	3.0-6.5	slightly reduced	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Protein	6.7 %	5.5-10.0	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Water	78.61 %	71.0-81.0	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Sugars	0.008 %	0.0-0.059	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Fiber	6.02 %	1.3-4.1	strongly elevated	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Additional tests:				
Bile acids	0.49 μmol/g	2-4	strongly reduced	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Pancreatic elastase	501 μg/g	301-2000	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Secr.Immunoglobuline A	1047 μg/ml	500-1500	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Defensine	3.9 ng/ml	15-30 ng/ml	reduced	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Histamine	575 ng/g	100.1-400	slightly elevated	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Serotonine	148 ng/ml	500-1500	reduced	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Blood occult	0	normal value	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Parasites	0	normal value	no evidence	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Zonulin	40.1 ng/ml	0-30 ng/ml	elevated	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Tumormarker M2PK	<4 U/ml	0-4.0	normal value	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Interpretation:

Acid pH value: Detection of acid stool pH indicates disorders of intestinal ecology. The mucosa can be damaged by high amounts of fermentative bacterial metabolic products (lactic/acetic/propionic acid), from bifidobacteria, lactobacilli, and enterococci. Breast-fed infants host a flora that's dominated by bifidobacteria with a high protective value! Possibly disordered carbohydrate digestion impacts the "availability" of nutrients. Specific therapy approaches are causal: avoiding "incompatible" lactose, substitution of digestive enzymes, and dietetic (reduce slightly fermentable carbohydrates).

Decreased Fat: Decreased Fat in stool indicates fat-nutrition deficiencies. Deficit in unsaturated fats and fat-soluble vitamins (A, D, E, K) has to be avoided. Clearing recommended by blood analysis, e.g. fat acids profile.

Increased Fiber: Increased fiber indicates dietary errors (malnutrition, vegetarians, vegans). Excessive consumption of hard-to-digest or indigestible vegetable components (cellulose, fiber) can indicate supply deficiencies for the body. Intestinal mucosa can be mechanically damaged, leading to "fermentation dyspepsia". Please also note the water content: due to accelerated passage through the large intestine, physiological thickening in the colon is possibly reduced.

Reduced Bile Acids: Detection of reduced bile acids in stool indicates deficits in formation, release or flow of bile. The resulting maldigestion of fat can cause steatorrhea and "putrefactive dyspepsia". Causes of this reduction are organic: (insufficiency, stones) or functional: (spasm, thickened bile). Specific therapy approaches are causal (choleretics/biliary tract stimulants) therapeutic (cholelitholytic and/or choleospasmolytic agents) and dietetic (reduced intake of inappropriate fats). Clarification of causes with further diagnostic measures may be appropriate (abdominal ultrasound, MR, endoscopic retrograde cholangiopancreatography, etc.).

Defensin decreased: Defensins are peptides with antibiotic properties. They are built in the gut mucosa to protect against adhering and penetrating luminal germs, specially gram-negative bacteria. Lack of Defensin means the possibility of mucosal disturbance and inflammations, as discussed for chronic diseases like Morbus Crohn.

Increased Histamine: Increased histamine in stool is a direct indicator of mucosal inflammation and should raise suspicion of an intestinal hyperpermeability ("leaky gut") state. Causes can be diet-induced histaminosis, chronic sensitization (food allergies or pseudoallergies) and/or dysbiosis. Histamine is formed and deposited in mast cells (basophilic granulocytes) and released upon activation of these cells through IgE and IgG pathways in cases of allergy. Other mediators may also be produced after consuming red wine, hard cheese, salt-water fish, shellfish, pork, sauerkraut, food preservatives, food-colorants and glutamate, medication (e.g. analgesics, cardiac stimulants, acid blockers), by virtue of stress or through chronic inflammation from other causes. The level of histamine is generally directly proportional to clinical symptoms. Histamine, along with lactoferrin, levels may be useful in the differentiation of organic disorders such as "Inflammatory Bowel Diseases" and functional disorders, such as "Irritable Bowel Syndrome". Normal histamine and lactoferrin levels along with symptoms of gastrointestinal symptoms (pain, gas, diarrhea) indicates the probability of a more functional vs. organic disorder (i.e.: "Irritable Bowel Syndrome"). In functional bowel disorders, such as IBS, psychological counseling may be required for optimal therapeutic results. Food allergy testing is also recommended.

Serotonine decreased:

Serotonine is mainly builded in gut as neurotransmitter of the "gut brain" and is known as "wellness-hormone" or "truth drug". It's found in walnut, banana, pineapple, avocado, tomatoe, prune. It's builded from the amino-acid tryptophane, founded in cashew, beef, sunflower, tuna, chicken, egg, bran and mostly in cheese. For this building from tryptophane there is a need of vitamins B2 and B6, the daily need is 3,5 mg/kg body-weight. Reduced levels of Serotonine indicates the possibility of reduced wellbeing up to depression.

Zonulin increased: Zonulin is a protein which is involved in regulation of gut permeability by modulating the tight junctions between cells of the intestinal wall. Zonulin binds to specific receptors on epithelial cells and activates biochemical processes increasing the aperture and thereby permeability between the cells. This phenomenon is also named as "leaky gut". Hence food components, various elements of intestinal contents as well as diverse substances built in mucosa cells passes the intestinal barrier which might provoke and/or trigger inflammation, allergies, enterotoxycosis as well as autoimmune diseases such as coeliac disease, type 1 diabetes, multiple sclerosis or rheumatoid arthritis.

Increased Zonulin levels reveal reliably "gut inflammation" which precedes secondary diseases, also known as "**leaky gut syndrome**".

The intake of probiotics during the acute stage is able to improve the integrity of intestinal mucosa.

During remission phases of autoimmune diseases or chronic inflammatory bowel diseases the high zonulin level may normalize.

Tumor Marker M2PK inconspicuous:

M2PK shows specific metabolic activities of tumor cells, the "Pyruvate-Kinase".

This enzyme is builded only by malignant tumor cells (e.g. colonic carcinoma), not by normal cells of the gut epithelium or other tissues. For values up to 4 U/g stool there´s a specificity of 100% and a sensitivity of 94,7%.

This inconspicuous report stands for:

- patient without symptoms: no suspicion for colonic carcinoma or other malignant gastro-intestinal tumors, no imperative for coloscopy.
- patient with symptoms (e.g. evidence of occult blood or hemoglobine): no suspicion for colonic carcinoma or other malignant gastro-intestinal tumors, necessity for coloscopy to clear up symptoms and bleeding.

Conclusion:

Inflammation of the Intestinal Mucosa: The findings indicate an inflammatory process is at work in the intestinal mucosa. The causes are numerous: Enteropathogenic bacteria, viruses, parasites, Environmental Irritants, Food Intolerance/Allergy, inter alia. The stool sample findings are often inconclusive and require additional diagnostic procedures: nutritional diary, blood allergy tests. The emphasis in therapy is in the removal of causes. To "seal up" the permeable mucosa, a base diet of alternating boiled rice and boiled potatoes for a few days is helpful.

Therapy-Recommendation:

Therapeutic Options on Intestinal Mucosa Inflammation:

Removing the cause is the first priority.

Additionally, we recommend:

1. Nutritional counselling for a bland diet: a light, bland diet supports effective healing processes in the stomach and intestinal area, if need by including the elimination of grain products (containing gluten), eggs, cow's milk, yeast and soy. In the case of painful inflammation processes, a diet consisting entirely of boiled potatoes or boiled rice in daily alternation for one week is helpful.
2. Naturopathic remedies: Colostrum, Antioxidants, Vitamines A, C, E, Glutamine, Omega 3+6 Oil.
3. The following have supporting effects: Enzymes (even Digestive Enzymes), Healing Earth, Carminatives (Galingale, Ginger, Sage, Okoubaka).

Cholestasis: To improve digestion of fats, production and release of gall has to be stimulated. The condition of the gall bladder needs to be established. Moreover, in connection with Hyperlipidemia (e.g. cardiovascular risk, metabolic syndrome) and Detoxification, strive for a continuous flow of gall, on the one hand to prevent the build-up of cholesterine concretions, on the other hand to support the metabolic processes of the liver.



Dr. Peter Rosler DVM