

Vitalan Stool Diagnostics

Short Chain Fatty Acids SCFA

What are SCFA's ?

SCFA's like Acetic, Propionic, Butyric I resp. N-Form, Valerianic are the product of bacterial fermentation by Bacteroides, Bifidobacteria and Lactobacilli from fiber and/or putrefaction by E. coli resp. Biovares and Clostridia from protein/fat in the large intestine.

What's the role of SCFA's ?

SCFA's plays a important role in maintaining the flowing balance (steady state, homeostasis) in the intestinal ecology (the inner environment in the gut), formed by the gut microorganisms (microflora in lumen and on cells), chymus (nutrition – digestion), gut mucus (mucopolysaccharides), gut mucosa/epithel (integrity – inflammation) and local body defense (specific – non specific).

SCFA's main function is holding balance between bacterial species (Eubiosis - Dysbiosis) and nourishing the epithel cells from lumen, thus maintaining the integrity and stability of this barriere.

- Acetic Acid: accelerate gut movement (peristalsis) and energy uptake by epithel cells, is beneficial in normal amounts (lowers pH), contribute to fermentation dyspepsia
- Propionic Acid: influences gut movement (peristalsis), is beneficial in normal amounts (lowers pH), contribute to fermentation dyspepsia
- Butyric Acid N-Form: contribute to energy uptake of epithel cells, protect against inflammation, is beneficial in normal amounts (raises pH)
- Butyric Acid I-Form: contributes to putrefaction dyspepsia (raises pH) from protein/fat
- Valerianic Acid: contributes to putrefaction dyspepsia (raises pH) from protein/fat

Pathological Findings

SCFA's demonstrates mainly an overlook to the metabolic activities of the gut flora.

Imbalances between the SCFA's are signs for resp. are followed by:

- Dysbiosis : like fermentation or putrefaction with overproliferation of some species (forming high amounts of possible cell-toxic resp. -damaging metabolic products and liver burden) and downlowering of other species,
- Mycosis: occupation of free ecological nishes by yeast with inflammation and toxic burden,
- Malnourishing: starving of epithel cells, inflammation and dieing.
This is discussed as possible condition for Morbus Crohn and Colitis ulcerosa.
- Overreaction of Local Defense: Protein Loss Enteropathy (excessive secr. IgA resp. Defensine)

Diagnostic Possibilities

HPLC – High-Pressure-Liquid-Chromatography technique allows isolation and measurement of SCFA's in stool after special preparation. There are eastablished ranges of individual and total load.

Not included: analysis of Lactic Acid (fermentation), H₂S, NH₄, Indole, Phenole, Skatol (putrefaction)

Therapeutic Approaches

There are no specific therapeutic possibilities to influence SCFA's. The main approach trying to get influence on imbalanced state (overall and/or individual reduction resp. increase) is to eliminate possible causes by gut sanitation.

- Nutrition: feeding well-balanced diet (specially with needed amount of fiber), resp. bland diet avoiding civilisation diet/industrial food,
- Digestion: eating hygiene, drinking amount, improvement by enzymes and bile flow
- Microbiological Therapy: improving milieu resp. local defense by Probiotics, Yeast, Algae
- Inflammation Therapy: avoiding causes like food intolerance (Histaminosis), food allergy (Serotonine), Parasites (Blastocystis), Yeast (Candida), Bacteria (hemolytic E.coli, Clostridia) by antibiotics/antimycotics/antiparasitics plus restoring mucosal integrity by glutamine and antioxidants
- Supplementation: micronutrients (vitamins, elements, amino acids, essential oils)