BENEFITS OF SHORT CHAIN FATTY ACIDS

Short Chain Fatty Acid

- Currently there is a lot of interest in SCFA
- Sufficient good bacteria is needed for proper SCFA production
- SCFA aid colon function
- SCFA are absorbed into the body for more benefits
- Primary source is from the fermentation of carbohydrates by good bacteria

Synthesis of SCFAs

- The large intestinal flora ferments soluble fibre and produces approximately 20-30 g short chain fatty acids a day - acetate, propionate and butyrate
- Ratio 3:1:1 95% absorbed 5% excreted in faeces
- The epithelial cells of the colon get approximately 50% of their energy requirements from butyrate produced by the microflora.
- 5-10% of the body's energy is from SCFA's

Butyrate

- Nourishes the colon mucosa
- Produces T-cells in the gut – converting naïve T-cells into T-regulatory cells
- Acts as an anti-inflammatory in the colon as t-reg cells are essential for containing excessive inflammatory responses
- Helpful for IBD, colitis, allergy and autoimmunity

Butyrate

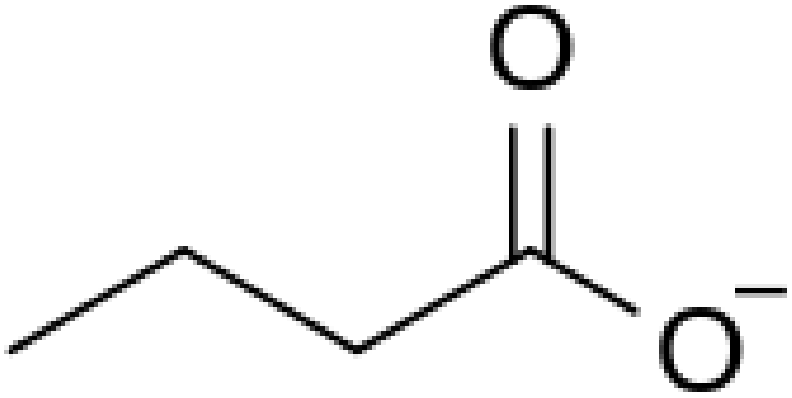
- Boosts overall immune function
- May prevent colon cancer by promoting cell differentiation (the process of one cell changing to another) and apoptosis
- Also decreases histone deacetylase which has been linked to tumour development
- Helps prevent cancer cells from spreading (metastasizing) and also from getting the blood flow they need to reproduce

Butyrate

- May lower low-grade, chronic inflammation present in obesity, type 2 diabetes, insulin resistance, high cholesterol, and heart disease
- Helps prevent heart disease and lowers cholesterol
- Helps prevent strokes
- Stabilizes blood sugar
- Helps memory and cognition

Butyrate

- Help heal “leaky gut” by stimulating mucous production, protecting the colon lining from bad bacteria attachment and stimulating repair
- Mouse studies have shown butyrate provided an improvement for Huntington’s Disease
- Controls hunger by increasing satiety



Butyrate

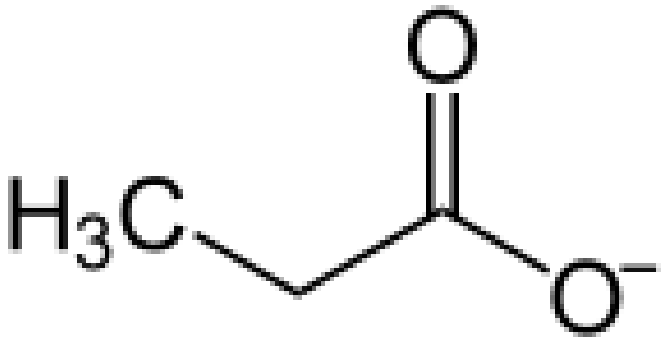
- Colon cells that are deprived of butyrate will begin to atrophy within 5 days.
- This will decrease the integrity of mucosal lining and causes mucous permeability to increase
- Relatively low numbers of colonic flora (eubacteria and peptococci) produce butyric acid from lactic acid
- SCFA is produced from Bifidobacteria producing lactate that is fermented by eubacteria and others

Propionate

- May be increased by of arabinoxylan (type of fiber in grains), polydextrose (soluble fiber), and L-rhamnose (a type of sugar)
- Can lower lipogenesis (the storage of carbs as fats) and serum cholesterol
- Can also inhibit the formation of cancer cells
- Help glucose metabolism and lowers glycemic response

Propionate

- Helps create a protective barrier against pathogens in the gut
- Helps with repair of the gut lining
- Help reduces food intake and aids the maintenance of weight (or could aid weight loss)

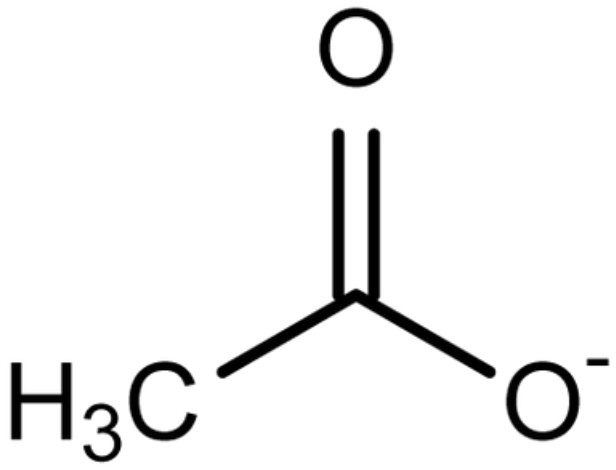


Acetate

- Can be metabolize to acetyl CoA which aids the process of acetylation
- Acetylation is helpful in detoxing pro-inflammatory histones, a factor in acute liver cirrhosis
- Acetyl CoA fuels the production of acetyl groups which can help make acetylcholine - essential for memory and cognition

Acetate

- Acetylation is also a process for Phase II liver detoxification
- Acetate is the most predominant SCFA in feces
- It also aids gut motility and maintaining the gut lining



Food sources

- Fermented fibres from carbohydrates especially grains, root vegetables such as potatoes, Jerusalem artichokes and legumes
- Butter for butyrate, as well as cheese and milk
- Fermenting grains and legumes ahead of time is a great way to ensure short chain fatty acid
- Sourdough bread a source of SCFA