

**Gut Health is the foundation of all health.
This includes cancer survivorship and thrivership.**

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Here are three factors for optimal thriver-ship that are in your control.

1. Butyrate:

Butyrate is the fuel for all of our cells lining our large intestine. This is produced by our intestinal bacteria for us. This has multiple properties including anti-inflammatory, anti-cancer, and detoxification support. Perhaps most importantly, butyrate activates tumor suppressor genes.

2. Beta-glucuronidase:

Beta-glucuronidase is an intestinal bacteria enzyme that re-toxifies what the liver detoxifies. This includes estrogens. High levels means that the body cannot clear estrogens.

3. Beneficial bile acids: Intestinal bacteria transform liver bile into beneficial or potentially harmful metabolites. The beneficial bile acids are supported by the same means for butyrate and beta-glucuronidase.

Note: Butyrate, beta-glucuronidase, and bile acids are all measurable in stool. Commercial labs that do so include Genova and DDI.

The Five Most Important Foods For Optimal Gut Health (if Tolerated)

Beans, Beans, Beans (start low, increase slowly, pressure cook or InstaPot cook)
Berries, Berries, Berries
Apples and other pectin sources
Vividly colored vegetables
Resistant starches

Five Means to Support More Butyrate

- a. A. Prebiotic diet
 - i. High plant-based diet for fiber from difficult-to-digest plant polysaccharides found in beans and flax seeds.
 - ii. Resistant starch (green bananas, raw potato, cooked then cooled potatoes or rice, which can be reheated)
 - iii. Inulin-containing foods (wheat, onion, bananas, garlic, asparagus, and chicory);

iv. Pectin-containing foods (dried citrus peels and apples, carrots, guavas, gooseberries, oranges, pears, plums, quince);

v. Oligosaccharides: asparagus, bananas, barley, chicory, Jerusalem artichoke, jicama, leeks, wheat, and yacon, plus soybeans and bovine lactose derivatives.

B. Citrus pectin as a supplement.

Option: Modified Citrus Pectin, one to two capsules per day (caution: may constipate, take with extra water each day)

C. Italian pecorino, Spanish manchego, Greek feta and other sheep cheeses made from lamb rennet paste as well as butter are rich in butyrate or its prodrug form tributyrin. Of note, the term butyrate comes from the word butter, its best-known dietary source. (ghee is also

D. Butyrate supplementation as an enteric coated tablet. Oral butyrate has both a short half-life and is subject to first-pass hepatic clearance. Multigram doses are needed to achieve therapeutic concentrations in vivo. Side effects with oral use include headache, nausea, and anorexia.

E. Butyrate supplementation as a liquid supplement

Seven Means to Support Minimal Beta-glucuronidase

1. Low animal fat diet (especially meat more than dairy)
2. Flavanoids (the vivid colors found in fruits and vegetables) including blueberries, pomegranates, plums, purple grapes.
3. Sources of quercetin (onions, leeks, brussel sprouts, kale broccoli, berries, beans, and apples)
4. Lycopenes (found in cooked tomatoes)
5. Probiotic termed *Bifidobacterium longum*
6. Quercetin as a supplement
7. Calcium-D-glucurate (the preferred supplement for reducing elevated levels)