

## **The Portalcaval Anastomosis: A Novel Nutraceutical Delivery System**

*Utilizing the naturally occurring venous communication between the portal and systemic venous systems for significantly less alteration and higher [bioavailability](#) of nutraceutical supplementation.<sup>2,3</sup>*

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Unfortunately, we live in a toxic world. A world where near 90% of the water is contaminated with plastics;<sup>1</sup> where our food is genetically modified, sprayed with pesticides and herbicides; where chemicals are being produced and dumped in the environment on a daily basis. This translates into higher toxic burdens in our bodies and thereby stressed organ systems. Specifically, our gut (gastrointestinal) system takes one of the biggest hits in terms of its predisposition to damage by toxins. When the foundation of our health, the gut, is compromised it impairs proper absorption of nutrients. It also impairs absorption of various supplements that we take to help our boost our bodies ability to detoxify and fight cancer. For instance, when you swallow a capsule it travels through the gastrointestinal system where immune cells, called dendritic cells “police” the contents to decide if it is “acceptable or not.” Often, a living in a pernicious environment leads to hyperactivation of our immune gut cells and what would normally not cause an immune response does. Even in the form of what seems like a harmless capsule containing “beneficial” ingredients, the immune system can block its absorption and/or produce an immune response against it. Also, the cells lining the GI tract called endothelial cells can become “leaky” and dysfunctional from toxic-insult; this can mechanically lead to poor absorption. Fortunately, we have cells that can absorb nutrients in other areas of our body. A novel approach of delivery of nutrients and other supplements via the rectal veins, where there is a connection between the portal and systemic circulation, is being investigated. Seemly unharmed by the

environment, rectal absorption via the *portalcaval anastamosis* has promise as a new method for better absorption of many traditionally orally-dosed nutraceuticals.

Delivery of various nutraceuticals via the rectal route bypasses around two thirds of the first-pass metabolism as the rectum's venous drainage is two thirds systemic (middle and inferior rectal vein) and one third hepatic portal system (superior rectal vein). This means the substance will reach the circulatory system with **significantly less alteration and in greater concentrations**.<sup>3</sup>“A drug that is administered rectally will in general (depending on the drug) have a faster onset, **higher bioavailability**...”<sup>2,3</sup> Another advantage of administering substances rectally, is that it tends to produce less nausea compared to the oral route and prevents any amounts from being lost due to vomiting.

Important in cancer care, rectal delivery may be better fit for those doing **Time Restricting Eating (TRE)**. Briefly, this is the method where eating is restricted to a window around 7-10 hours. The goal is to give the gut an extended period of time of rest in order to repair itself from daily damage from toxins. Scientific research supporting TRE is robust, especially regarding cancer. When eating-time is shortened it can be difficult to find time to take daily supplements inside the restricted time. Rectal administration of nutraceuticals does not affect the resting period which is critical for repair. A large portion of the body's immune system also resides in the gastrointestinal system; encouraging other methods and sites of absorption may help decrease aberrant immune activation and sensitization.

Independent of the positive effects of absorption, rectal administration can allow patients to remain in the home setting when the oral route is compromised or utilized

when cancer (or treatment) affects the ability to use an oral administration route. Unlike intravenous lines, which need to be placed in an inpatient environment and also require costly formulations of sterile medications,<sup>5</sup> a rectal catheter can typically be placed at home. Many oral forms of medications and supplements can be crushed and suspended in water to be given via a rectal catheter.

## References

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