



Presents New Research on Digestion

Evidence Proving The Efficacy Of Infinity2 Enzymes

Background

A study was conducted to determine the efficacy of Infinity2's supplemental digestive enzymes on the digestibility of proteins and carbohydrates, and the bioavailability of nutrients under the following conditions:

- A) Healthy human adult digestion (perfect conditions).
- B) Impaired digestion - 70% reduced gastric and intestinal secretions.

These two extremes were tested because the digestive capabilities of most humans fall somewhere in between.

The underlying premise for taking a digestive enzyme supplement is the capacity for better nutrient absorption through enhanced digestion. Infinity2's digestive aid formulas, Digest-a-Meal and Essentials for Life 2, are comprised of a complete blend of digestive enzymes. Furthermore, all Infinity2 formulations utilize our exclusive CA^{CD}S[®] delivery system, which includes a blend of specific digestive enzymes and chelated minerals to maximize nutrient delivery and absorption. The intention of this study was to provide clear scientific evidence of the efficacy of Infinity2 supplemental plant derived digestive enzymes for the digestion of food and absorption of nutrients.

To quantify the efficacy of supplemental enzymes, a series of experiments using a computer controlled dynamic gastrointestinal model (TIM) were undertaken. TIM is a unique patented technology that simulates the conditions of the human stomach and the small intestine. Using this technology, we accurately replicated the dynamic environment of the human stomach and the small intestine when food is being digested and absorbed. The TIM system was fed a meal (standard FDA type) with and without supplemental digestive enzymes. The extent of digestion was monitored by sampling nutrients at various times and at different points in the GI tract.

Four different types of TIM experiments were performed in duplicate with the same standard FDA meal as follows:

- a) Meal without the digestive enzymes under perfect digestive conditions.
- b) Meal with the addition of digestive enzymes under perfect digestive conditions.
- c) Meal without the digestive enzymes under 70% reduced gastric and intestinal secretion (impaired digestion).
- d) Meal with the addition of digestive enzymes under 70% reduced gastric and intestinal secretion (impaired digestion).



Guaranteed nutrient delivery.™

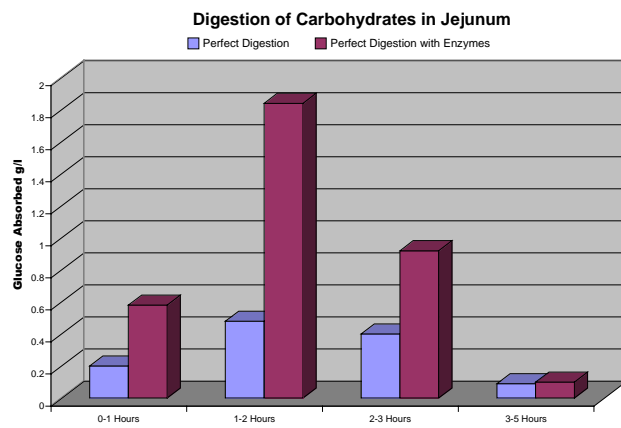


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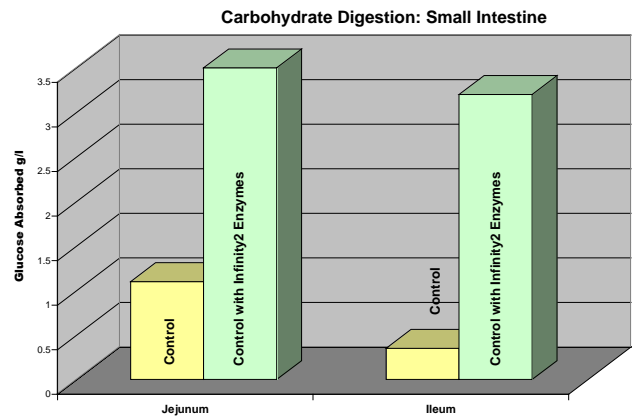


Results – Perfect Digestive Condition

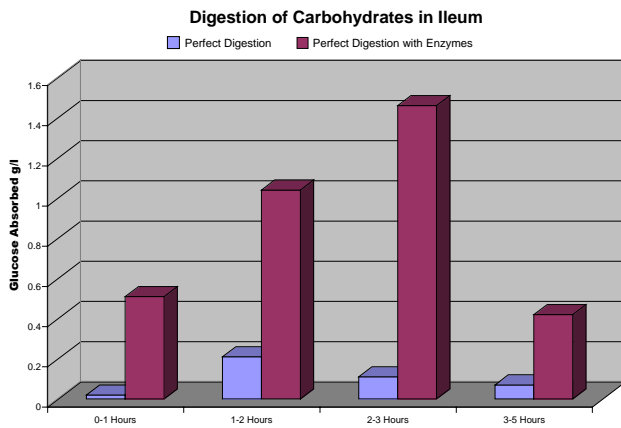
The following graphs compare the digestion of carbohydrates and proteins under *perfect digestive conditions*, tested with and without the aid of a plant-based digestive enzyme blend.



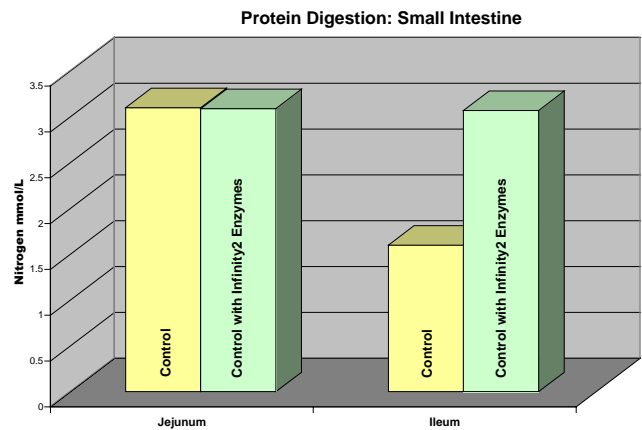
Graph 1: Shows a substantial increase in the level of digestion of carbohydrates in the lumen of the jejunum over a 5 hour span with Infinity2 plant based digestive enzymes even under perfect digestive conditions.



Graph 3: The total digestion of carbohydrates is increased nearly 4 fold in the small intestine with Infinity2 plant based digestive enzymes even under perfect conditions.



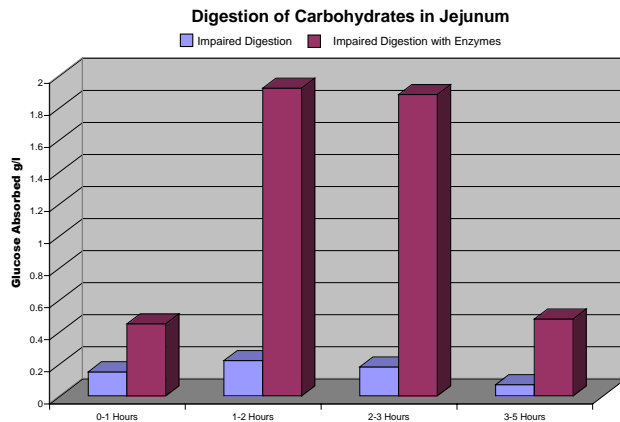
Graph 2: Shows a substantial increase in the level of digestion of carbohydrates in the lumen of the Ileum over a 5 hour span with Infinity2 plant based digestive enzymes even under perfect digestive conditions.



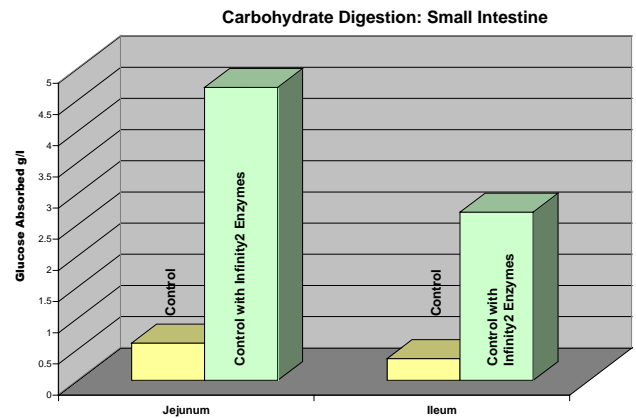
Graph 4: The digestion of proteins nearly doubled in the ileum and remains essentially the same in the jejunum with Infinity2 plant based digestive enzymes under perfect conditions.

Results – Impaired Digestive Conditions

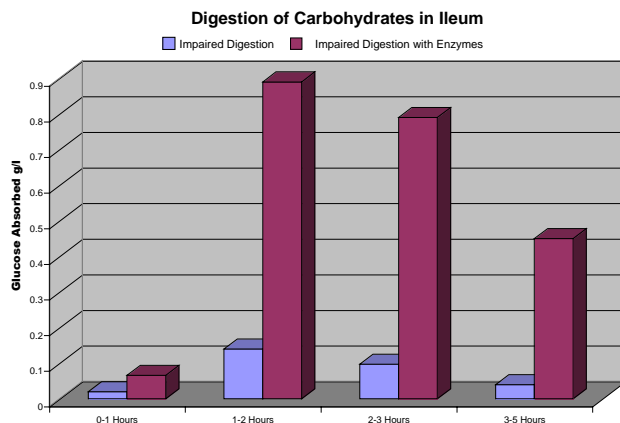
The following graphs compare the digestion of carbohydrates and proteins under *impaired digestive conditions* tested with and without the aid of a plant-based digestive enzyme blend.



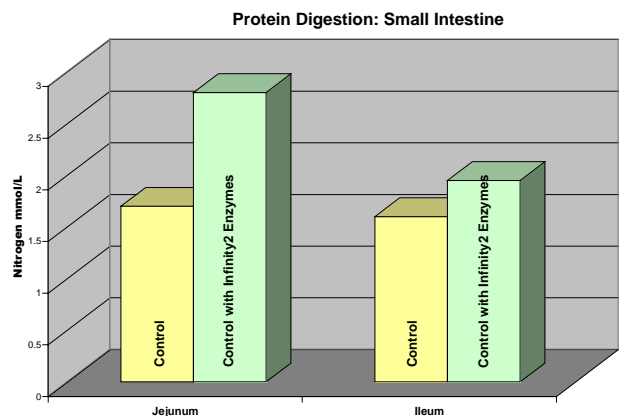
Graph 5: Shows a substantial increase in the level of digestion of carbohydrates in the lumen of the jejunum over a 5 hour span with Infinity2 plant based digestive enzymes under impaired conditions.



Graph 7: The total digestion of carbohydrates is increased about 7 fold in the small intestine Infinity2 plant based digestive enzymes under impaired conditions.



Graph 6: Shows a substantial increase in the level of digestion of carbohydrates in the lumen of the Ileum over a 5 hour span with Infinity2 plant based digestive enzymes under impaired conditions.



Graph 8: The digestion of proteins increases significantly in the small intestine with Infinity2 plant based digestive enzymes under impaired conditions.

For each TIM run, 170 g of the standardized FDA-type of test meal (proteins, carbohydrates and fats) were mixed with 100 ml drinking water and 70 ml artificial saliva. The extent of digestion was monitored by sampling nutrients (glucose and nitrogen) at various times and at different points in the GI tract. The secretion products of the human digestive system consisting of gastric juice with enzymes, pancreatin, bile and bicarbonate were added to the system at the appropriate time. The pH was monitored and maintained at physiological conditions and peristalsis was mechanically simulated. The gastric emptying and intestinal passage time were mimicked as per human conditions.

Samples were collected over a 5 hour span at two points in the small intestine: jejunum (upper small intestine) and ileum (lower small intestine). The samples represented the extent of digestion during each of the test conditions mentioned above. Samples were collected using a method called dialysis, which closely approximates the absorption of nutrients through the lumen of the gut. Thus, only nutrients, and not undigested food, passed through and were collected as samples. Analysis of these samples for glucose and nitrogen content correlated directly with the extent of carbohydrate and protein digestion respectively in the GI tract.



Evidence Proving The Efficacy Of Supplemental Enzymes



Conclusion

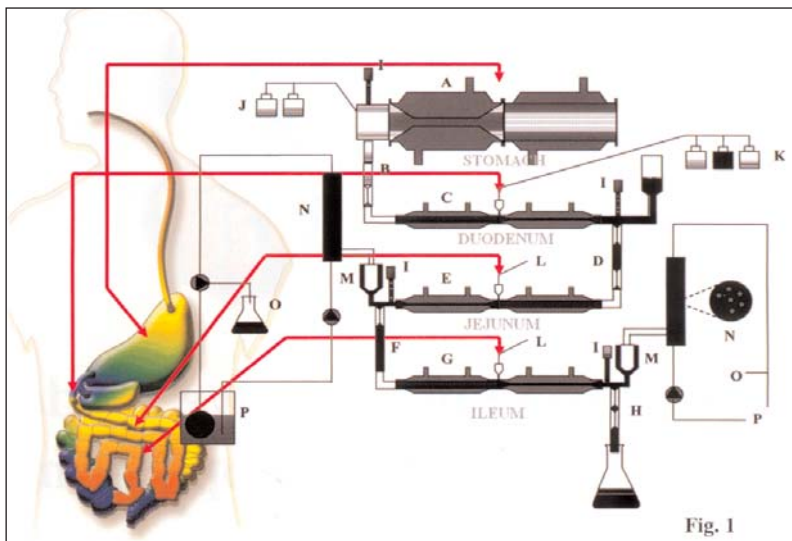
The results of the study clearly show that Infinity2's plant based digestive enzymes improve the digestibility and bioavailability of proteins and carbohydrates in the lumen of the small intestine. The improvement was significant not only under impaired digestive conditions, but also in healthy human digestion. Furthermore, the test meal fed to the TIM system was an FDA recommended meal, which is smaller in macronutrient content and total calories than the typical American diet. The conservative amount of food used in the experiments, and the corresponding results obtained, further testify to the benefits of using quality, plant-based digestive enzyme supplements.

The activity of any digestive enzyme supplement in the small intestine presupposes that the enzymes in the supplement survive the acidity of the stomach. From the above experiments we have established that Infinity2's digestive enzymes do survive the acidity of the stomach and work in the small intestine. In fact, the research has demonstrated that Infinity2's plant-based enzymes not only survive the acidity of the stomach, but also are active in that harsh environment where most other types of enzymes are inactivated.

This research shows that Infinity2's plant based digestive enzymes substantially increase the level of digestion in the lumen of the small intestine and bioavailability of proteins and carbohydrates. These results not only validate the use of digestive enzymes in cases of impaired digestion, but even more importantly, clearly demonstrate that most healthy adults can substantially benefit by using a quality digestive enzyme supplement from Infinity2.

Using an enzyme supplement will aid in digestion, increase the utilization of nutrients in foods and supplements and ensure that these nutrients are available to the cells of the body. This means that the cells of your body have more nutrients available for energy production, improved immunity and rebuilding and repairing tissues. By using enzymes to help completely break down foods into their nutrient components and aid in digestion, the body has more energy for other functions and you should experience less bloating, constipation, heartburn and other symptoms of indigestion. Completely digesting food also reduces food allergies and food intolerances and reduces the stress on the immune system.

Below is a graphical representation of the TIM System and the corresponding parts of the GI tract.



Schematic diagram of the dynamic, multi-compartmental model of the stomach and small intestine (TIM-1): A. gastric compartment; B. pyloric sphincter; C. duodenal compartment; D. peristaltic valve; E. jejunal compartment; F. peristaltic valve; G. ileal compartment; H. ileo-caecal valve; I. pH electrodes; J. gastric secretion bottles with acid and enzymes; K. duodenal secretion bottles with bile, pancreatin, bicarbonate; L. secretion of bicarbonate to control the intestinal pH; M. pre-filter system; N. hollow fibre semi-permeable membrane system; O. water absorption system; P. closed dialysing system.