Can I Eat That? An Investigation into the Effectiveness of Gluten Digestive Dietary Supplements

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Coeliacs are required to follow a strict gluten free diet, to prevent damage to the small intestine. This experiment investigated the efficacy of two gluten digestive dietary supplements in the breakdown of gluten, under different conditions. The investigation measured whether the supplements were more effective at breaking down gluten than trypsin (a natural gluten digesting enzyme), and whether their effectiveness was affected by heat or acidity. The experiments were conducted by grinding the supplements and adding them to buffer solutions simulating the pH of the small intestine (pH7) or the stomach (pH3), or using trypsin for comparison. Gluten was added and conditions varied to test the effect of heat, and were left for an hour for gluten digestion to occur. The residual gluten was then analysed using both an ELISA test and a western blot, cross checking results between the two methods. The experiments concluded that one of the supplements was very effective at digesting gluten and the other was somewhat effective. The enzymes in the supplements were most effective at pH7, which simulated conditions in the small intestine. Boiling reduced the effectiveness of one of the supplements but had no effect on the other. Trypsin was confirmed to digest some gluten under small intestine conditions. This confirms that the type of gluten used was behaving as expected and was compatible with the experiment. Both of the supplements digested significantly more gluten than trypsin alone under all conditions, confirming their potential for preventing damage to the small intestine in coeliacs.

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