

## Abstract

# Rapid and Synchronized Dormancy-Breaking Jumbo Leek Bulb Inhibits Postprandial Carbohydrate Degradation and Absorption to Be Assumed Preprandial Ingestion <sup>†</sup>

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**Abstract:** In order to prevent obesity and diabetes, it is important to avoid overeating, especially carbohydrates. Therefore, we evaluated the effect of taking a jumbo leek bulb before a meal on the decomposition and absorption inhibition of carbohydrates after a meal. In this case, we used a product that had been heat-treated after rapid and synchronized dormancy-breaking (RSDB) had been used to promote phase transition of its content, and we investigated by decreasing two enzyme activities, namely pancreatic  $\alpha$ -amylase and  $\alpha$ -glucosidase, and reported the results. In the case of pancreatic  $\alpha$ -amylase, the untreated (heated and lyophilized) without RSDB showed a 6.5% inhibition of enzyme activity when compared to the control. In contrast, the RSDB inhibited it more effectively by 12.5%. In the case of  $\alpha$ -glucosidase, the untreated group had 9.1% inhibition of enzyme activity, whereas the RSDB treatment had 14.6% inhibition, which was about 1.6 times more effective than the untreated group. Thus, the RSDB jumbo leek bulb, when taken before a meal, was found to inhibit postprandial carbohydrate decomposition and absorption (postprandial hyperglycemia prevention effect). It is possible that the inulin in the jumbo leek has an inhibitory effect on glucose absorption by wrapping the carbohydrates, but the RSDB treatment may have accelerated the effect. Furthermore, organosulfur compounds are expected to enhance insulin production and efficiency. In conclusion, the high efficacy of the RSDB jumbo leek in suppressing postprandial carbohydrate degradation and absorption was observed in a model experiment. The RSDB jumbo leek bulb is expected to be effective in preventing obesity and diabetes.

**Keywords:** carbohydrate; ingestion; obesity; diabetes; degradation; absorption; supplement; food; jumbo leek; dormancy-breaking



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