



杭州康纯进出口贸易有限公司

HANGZHOU COMTRUE TRADING CO., LTD

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## Hangzhou Comtrue- Cancer-Fighting Agent Restored in

### Frozen Broccoli

Vegetables and Fruits Supplier, Bean products Distributor, Canned and Fresh foods Wholesaler or OEM Service factory-Hangzhou Comtrue Trading Co.,Ltd.

The cancer-fighting phytochemical, sulforaphane, can be restored in frozen broccoli, according to a study published in the Journal of Food Science.

Initially, researchers from the University of Illinois discovered that frozen broccoli does not have the ability to form sulforaphane, according to findings from their study published in the Journal of Functional Foods. "Only three to five servings of broccoli per week provides a cancer-protective benefit, however that isn't true for bags of broccoli that you pluck out of your freezer," said Elizabeth Jeffery, University of Illinois professor of nutrition. "The problem begins when soon-to-be frozen broccoli is blanched, or heated to high temperatures, to inactive enzymes that can cause off-colors, tastes and aromas during the product's 18-month self-life. This extreme heat destroys the enzyme myrosinase, which is needed to form sulforaphane.

Upon this discovery, researchers, in a second study, experimented with blanching broccoli at slightly lower temperature instead of at the current industry standard which is 86 °C. Researchers used a temperature of 76 °C and found that 82% of the enzyme myrosinase was preserved without compromising food safety and quality. Further, sulforaphane is formed when fresh broccoli is chewed or chopped as its precursor glucoraphanin and myrosinase come in contact with each other. Researchers then exposed the frozen broccoli to myrosinase from a related cruciferous vegetable. They sprinkled .25% of daikon radish on the frozen broccoli, which resulted in the two compounds working together to form sulforaphane.

"This means that companies can blanch and freeze broccoli, sprinkle it with a minute amount of radish, and sell a product that has the cancer-fighting component that it lacked before," said Edward B. Dosz, a graduate student in Jeffery's laboratory. Additionally, the study showed that sulforaphane survived the heat of microwave cooking the frozen broccoli. "We were delighted to find that the radish enzyme was heat stable enough to preserve broccoli's health benefits even when it was cooked for 10 minutes at 120 °F," said Dosz. This is an important discovery for food processors as they can now adopt this process and market frozen broccoli that has all of its original nutritional value. Consumers can even reinstate the cancer-fighting agent in broccoli themselves by steaming frozen broccoli with raw radishes, cabbage, arugula, horseradish, spicy mustard or wasabi, Jeffery added.

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