

A high antioxidant spice blend attenuates postprandial insulin responses and increases hydrophilic ORAC in vivo

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Culinary spices have among the highest *in vitro* oxygen radical absorbance capacity (ORAC) of all foods. No published studies have examined the time course of postprandial ORAC after spice consumption, and few have examined effects of spices on insulin, glucose, and triglycerides. We assessed the effects of adding 14 g of a high ORAC spice blend (cloves, cinnamon, oregano, rosemary, ginger, black pepper, paprika, garlic powder, and turmeric) to a standardized meal in 6 healthy middle-aged men in a randomized, placebo controlled, crossover design. Prior to testing, subjects consumed a low ORAC diet for 48 hours. Spiced test meals (1200 kcal) consisted of a chicken and rice curry, herbed bread, and dessert pastry. Blood was sampled pre-meal, 30 min after the first bite of food, and then every 30 min for 3 hours (8 samples). The addition of spices significantly attenuated postprandial insulin responses ($p = 0.003$) and significantly increased plasma hydrophilic ORAC values ($p = 0.03$). These effects remained significant when adjusted for pre-treatment values. Glucose, triglycerides, and lipophilic ORAC were not affected by the spice blend. This work confirms that adding spices to a meal may attenuate postprandial insulin response, and we are the first to report an increase in plasma hydrophilic ORAC after spice consumption. This study was supported by the McCormick Science Institute.

