

## ABSTRACT

### **Introduction:**

Dietary isothiocyanates (ITCs) found in cruciferous vegetables (*Brassica spp.*) has been reported to reduce cancer risk. ITCs act as anti-carcinogens by inducing phase II conjugating enzymes, in particular glutathione S-transferases (*GSTs*). These enzymes also metabolize ITCs, such that the protective effect of cruciferous vegetables may predicate on *GST* genotypes.

### **Objectives:**

This case-control study aimed to determine the association between dietary ITCs, *GSTs* polymorphisms and ITCs-*GSTs* polymorphisms interaction with oral cancer risk.

### **Methods:**

115 and 116 cases and controls respectively, were selected from within the Oral Cancer Research & Coordinating Centre (OCRCC), University of Malaya (UM) database between June 2006 and January 2007. Secondary data was used of which the information on dietary ITC intake from cruciferous vegetables was collected via a semi-quantitative food frequency questionnaire (FFQ). Peripheral blood lymphocytes were obtained for genotyping of *GSTM1*, *GSTT1* and *GSTP1* using PCR multiplex and PCR-RFLP respectively. Chi-square, logistic regression and stratified analysis was performed using the SPSS (ver 12.0) to investigate the role of ITC and *GSTs* polymorphism in modulating the risk of oral cancer.

**Results:**

When dietary ITC was categorized into high (greater than/equal to median) and low (less than median) intake, chi-square analysis revealed no significance difference in dietary ITC intake between cases and control group. Logistic regression yielding odd ratios resulted in no significant association observed between dietary ITC intake, *GSTM1*, *GSTT1* or *GSTP1* genotypes with oral cancer risk. Although not significant, stratified analysis, however, indicated a potential 20% risk reduction among *GSTP1* polymorphism individuals that consumed high dietary ITC (OR 0.80, 95% CI 0.39 – 1.64).

**Conclusion:**

This study suggests that there was no association between dietary ITCs and *GSTs* polymorphisms with oral cancer risk. Further investigation, however, is strongly recommended to investigate the potential of higher dietary ITCs intake in reducing the risk of oral cancer among individuals with low GST activity.

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