Screening for colorectal cancer risk biomarkers related to diet

Conference Item

How to cite:


For guidance on citations see FAQs

© 2010 The Open University
Version: Accepted Manuscript

Copyright and Moral Rights for the articles on this site are retained by the individual authors and/or other copyright owners. For more information on Open Research Online’s data policy on reuse of materials please consult the policies page.

oro.open.ac.uk
Screening for colorectal cancer risk biomarkers related to diet

Da Pieve, C¹, Moore, S², Velasco-Garcia, M¹

¹ The Open University, Milton Keynes, UK
² Liverpool John Moores University, Liverpool, UK

**Background:** Red and processed meat are associated with high risks of colorectal cancer due to the endogenous formation of O⁶-carboxymethyl guanine (O⁶-CMG), a potent carcinogen. The aim of our research is to develop liquid chromatography tandem mass spectrometry (LC-MS/MS) analytical methods for the measurement of the DNA adducts, such as O⁶-CMG and its nucleoside O⁶-carboxymethyl deoxyguanosine (O⁶-CMdG), in urine samples and correlate it to different diets.

**Methods:** Urine samples were collected from volunteers on three different diets (vegetarian as the control, with red and processed meat as the experimental group) over a period of 15 days at the Medical Research Council, Cambridge. Samples were analysed by LC-MS/MS either by direct injection or using a column-switching system with an on-line solid phase extraction (SPE) column.

**Results:** An LC-MS/MS method was developed and used initially to monitor and quantify O⁶-CMdG and O⁶-CMG using standards in synthetic urine. O⁶-CMG elutes at 4.7 min and have a limit of detection (LOD) of 0.3ng/mL, and O⁶-CMdG elutes at 14.1 min and have a LOD of 0.03ng/mL. The LC-MS/MS direct injection analysis of the clinical samples showed low sensitivity and the need for sample clean-up.

**Conclusions:** An efficient method for the separation and quantification of O⁶-CMdG and O⁶-CMG was developed. An on-line SPE column system is under development to allow an efficient and rapid processing of a large number of clinical urine samples.

**Word Count (max 250):** 227

**Abstract:** Nutritional Epidemiology and Cancer

**Conflict of Interest:**

None Disclosed

**Funding**

Research related to this abstract was funded by the World Cancer Research Fund (WCRF)