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**Environmental Risk Exposure And Serum Trace Elements: Discovering The True Interaction In Colorectal Cancer**

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**ABSTRACT**

Colorectal cancer (CRC) is expected to increase by 60% by the year 2030. The complex interplay between element and environmental factor is thought to be leading to the carcinogenic process of CRC. The objectives of this study were to determine the environmental risk exposures towards CRC and the possible interaction with circulating trace elements. A case control study was conducted among CRC and non-CRC patients from UKM Medical Centre (UKMMC). Demographic data and environmental risk exposures (smoking, alcohol intake, obesity, physical activity, dietary intake) were assessed by a set of questionnaires. Serum samples were collected for trace elements determination by ICPMS. The mean age of CRC patients and control were 63.16 (10.33) and 60.45 (10.71) years, respectively. Majority of the CRC patients were male, Malay, diagnosed with left sided tumour and classified either as Duke’s B or C. Analysis on the environmental risk exposures revealed that CRC patients who are smokers ( aOR 3.76, 95CI% 1.57, 8.95), obese (aOR 2.74, 95CI% 1.01, 7.44), had low physical activity (aOR 5.19, 95CI% 2.05, 13.12) and consumed more red meat (aOR 1.13, 95CI% 1.08, 1.19) pose higher risk towards CRC as compared to the control. Contrastly, higher intake of white meat (aOR 0.983, 95CI% 0.972, 0.994) and Zn (aOR 0.733, 95CI% 0.635,0.846) reduced the risk towards CRC. The exposure findings were consistent with previous studies but the interaction with trace elements and how it may change the risk toward CRC remains to be elucidated.