

DEFENCE ANNOUNCEMENT

Final Examination for the Degree of MSc

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Date: May 31, 2018

Time: 1:00 pm to 4:00 pm

Location: FS241

Examining Committee

Dr. Art Hill, Chair

Dr. Gisele LaPointe, Advisor

Dr. Emma Allen-Vercoe, Advisory Committee Member

Dr. Yoshi Mine, Department Member

TITLE: EVALUATION OF THE IMPACT OF AZO DYES ON THE METABOLISM OF STABILIZED FECAL COMMUNITIES AND *IN VITRO* CELL CULTURE

ABSTRACT: The human gut microbiota is a complex and dynamic ecosystem of microbes existing in symbiosis with the host and can be altered by diet. Azo dyes, are present in a large portion of our diet. To investigate the impact of azo dyes on gut microbial metabolites, a stabilized fecal slurry was subjected to Tartrazine exposure and metabolites were analyzed via 1-dimensional proton nuclear magnetic resonance. Results revealed that Tartrazine had a negative effect on 10 out of 13 profiled metabolites. Tartrazine had a negative impact on the transepithelial resistance of *in vitro* cultured Caco2 epithelial cells and increased the secretion of TNF α . Data from Guelph Health Family Studies suggested that children up to 6 years of age tend to consume 1.2 meals daily containing azo dye. This study suggests that dyes present in food interact with gut microbiota; the resulting metabolites may cause inflammation, leading to effects on human health.