animals leads to hyperglycemia, decreased glucose tolerance, and insulin resistance. Thus, carrageenan is able to induce changes that underlie the development of DM. It has been shown that food additive E407 inhibits insulin signaling in the mouse liver. In an *in vitro* experiment, it has been demonstrated that insulin signaling is also inhibited in human HepG2 cells exposed to carrageenan. Carrageenan-induced insulin resistance is aggravated due to high fat diet in mice. However, it is interesting to note that carrageenan is not digested in the gut and due to its high molecular weight it cannot be absorbed. Thus, its effects on carbohydrate metabolism are highly likely indirect and may be explained by carrageenan-induced inflammation.

Conclusions. Carrageenans might negatively affect glucose tolerance, promote insulin resistance and inhibit insulin signaling contributing to DM development. However, further investigation of carrageenan impact on carbohydrate metabolism is necessary to confirm this hypothesis.

CONSEQUENCE OF TRIHALOMETHANE ON INFANT GROWTH

Hiba Bassam Shalha, Assoc. Prof. Tatyana Popova Kharkiv National Medical University, Kharkiv, Ukraine

Introduction. Disinfection of drinking water results in the formation of numerous disinfection byproducts (DBPs). The trihalomethanes are typically the most prevalent class of DBPs found in treated water and include chloroform, bromodichloromethane, dibromochloromethane, and bromoform. In the present study, we evaluated the effect of maternal TTHM exposure on several indices of fetal development.

Aims. Investigate the effect of total trihalomethane (TTHM) exposure on infant birth weight, low birth weight, and intrauterine growth retardation in term births.

Methods. According to data recorded in the Massachusetts birth registry, cross sectional analysis of 56 513 singleton infants born to residents of Massachusetts during 1990. Total trihalomethane samples were collected weekly on Mondays in vials containing ascorbic acid as a preservative for the trihalomethane compounds. Trihalomethane concentrations were determined. The total trihalomethane exposure estimates on gestational age, and environmental sampling data were done. Relying on weekly total trihalomethane samples, calculated each mother's trimester-specific and pregnancy average exposure, assuming that the mothers lived at the residence reported on the birth certificate throughout pregnancy. Analytical variability or precision for the total trihalomethane sampling method is estimated at about 20 percent.

Results. The results indicate that exposure to high trihalomethane levels during pregnancy is associated with reductions in birth weight among term births. Reductions of 2.8 g for each 20 μ g/l increase in pregnancy average TTHM concentration and 2.6 g for each 20 μ g/l increase in second trimester TTHM concentration were observed. Increased pregnancy average and second

trimester TTHM exposure were associated with small for gestational age and reductions in birth weight after adjusting for potential confounding variables. Compared to $\leq 60 \ \mu g/l$, pregnancy average TTHM exposure over 80 $\mu g/l$ was associated with a 32 g reduction in birth weight. There was a 23 g reduction in birth weight in infants born to mothers exposed to greater than 80 $\mu g/l$ TTHM during the second trimester.

Conclusion. Maternal exposure to THMs may be associated with fetal growth retardation. Although there is a smaller effects of TTHMs on low birth weight and intrauterine growth retardation. Therefore, the pregnant women must prevent these products as much as they can.

DENDRITIC CELLS AND DIETARY ANTIGENS

Maryna Nikulina Mathematisch-Naturwissenschaftliche Fakultät der Heinrich-Heine-Universität Düsseldorf

Type 1 diabets mellitus (TIDM) is characterized by an immune-mediated selective destruction of insulin-produsing β -cells in the pancreatic islets of Langerhans. Disease incidence in animal models can be broadly modulated by the diet, suggesting an important role of the gut immune system in the development of TIDM. Dendritic cells (DCs) are the main antigen-presenting cells that are considered as main regulators of mucosal immune responses and of oral tolerance. **Aims of the study.** The study explores the hypothesis that the gat immune system and antigen-presenting cells (APCs) are important in promoting the development of autoimmunity.

Resalts. The first part of the study dealt with in vitro interaction of murine bone-marrow-derived DCs (BMDCs) with two antigens with relevance to gat immunity in general and TIDM in particular, wheat gluten (WG) and heat shock protein (Hsp) 60. An α-chymotryptic digest of WG was found to activate BMDCs and cause their maturation in a dose-dependent manner. These effects were not mediated by TRL2 or TRL4 receptors. Immune mediators secreted by WG-activated BMDC comprised IL-1B, CXC!.2, CXCI.1 and CCI.5, but not TNF- α or CCI,2. This suggests that WG increases immune alertness, but does not deliver a pro-inflammatory signal. By contrast, the contact of rhHsp60 with BMDCs that was partly TLR4-dependent, and the production of procytokines TNF- α , IL-12h70, IL-1 β , minimal amount inflammatory of antagonistic IL-10, or of the chemokines CCL,2, CXCI.1, CXCI.2 and CCI.5.The second part of the work concerned the intestinal immune response to diabetes-promoting wheat-gluten-containing food vs. diabetes - retardant hydrolysrd casein (HC) diet in the upper small intestine (duodenum)of Bio-Breeding diabetes-prone (BBdp) rats of 23, 30, 45, 70, 95 and 120 days of age in comparison with non diabetes prone Dio-Breeding control (BBc) and Wistar-Furth (WF) rats, and of 10-days-old rats. The Th1 response in the duodenum estimated by IFNy level and the IFNy/ IL-10 ratio was not modulated by the type of diet.