

17th World Congress on **Nutrition and Food Chemistry**
&
14th Euro **Obesity and Endocrinology Congress**

September 13-15, 2018 | London, UK

A high fat diet induced obesity modulates melanoma tumour microenvironment in Low density lipoprotein receptor deficient *LDLR*^{-/-} mouse modelRafah Oday Al-Zubaidi¹, Cordula Stover¹ and Lee Machado²¹University of Leicester, UK²University of Northampton, UK

Inflammation and altered immune response are the main features of obesity and contribute greatly to the promotion of obesity-related metabolic complications, especially cancer development and progression. Adipose tissue expansion is associated with increased tumour infiltration by regulatory T cells (T-regs) which are critical regulators of the adaptive immune response. Adipocytes and infiltrating immune cells secrete pro-inflammatory adipokines and cytokines providing a microenvironment favourable for tumour growth. *LDLR*^{-/-} mice fed on high fat diet and control diet were subcutaneously injected with 5×10⁵ syngeneic melanoma cells (B16F10). After two weeks, tumours and spleens were dissected. Tumours and bodies were weighed at endpoint and then the percentage of CD4+CD25+FOXP3+T-regs population among splenocytes was determined by flow cytometry (FACS). High Fat Diet (HFD) feeding increases solid tumour growth combined with increases in adipose tissues of *LDLR*^{-/-} tumour bearing mice. The percentage of T-regs among spleen lymphocytes was significantly higher in tumour bearing mice fed on high fat diet compared with those fed on control diet. Obesity may promote tumour progression by favouring an immune suppressive tumour microenvironment.

Recent Publications

1. Jung J I, Cho H J, Jung Y J, Kwon S H, Her S, et al. (2015) High-fat diet-induced obesity increases lymphangiogenesis and lymph node metastasis in the B16F10 melanoma allograft model: roles of adipocytes and M2-macrophages. *Int J Cancer* 136(2):258–70.
2. Balistreri C R, Caruso C and Candore G (2010) The role of adipose tissue and adipokines in obesity-related inflammatory diseases. *Mediators Inflamm.* 2010:802078.
3. Calle E E, Rodriguez C, Walker-Thurmond K and Thun M J (2003) Overweight, obesity, and mortality from cancer in a prospectively studied cohort of U.S. adults. *N Engl J Med.* 348(17):1625–38.

Biography

Rafah Al-Zubaidi is a PhD student at the University of Leicester, UK, studying the role of high fat diet in melanoma cancer. She has 10 years' experience in immune system and medical investigations. She built this experience from teaching and administrative work in both hospital and education institutions. She is interested in cancer immunology research and the role of consuming high fat diet in the development of cancer and the disease progression. She has passion for exploring, developing and improving methods to decrease the incidence of different cancers diseases.

ra.oday@yahoo.com

Notes: