

20th International Conference on**Obesity**

September 23–24, 2021 Paris, France

25th World Congress on**Nutrition and Food Sciences**

September 23–24, 2021 Paris, France

volume: 6

Adipocyte Nanobodies may combat the inheritable obese traits in the foetus**Miss Akanksha Singh**

CSIR-NEERI, Nagpur

Abstract: Adiponectin is an obese hormone that is collagenous in nature and exclusively synthesized in white adipose tissues. Although, it acts as an important mediator in glucose and lipid mediated metabolic pathways, it is largely involved in the disorders such as obesity^[1]. Adipocyte gene (ADIPOQ) is mainly responsible for the formulation of adiponectin protein i.e.247 amino acids and 30KDa with amino and carboxy terminal domain and a collagenous domain. Adiponectin protein has a high affinity for receptors such as Adipo R1 and Adipo R2^[2]. These two receptors are activated in response to interaction with another biomarker APPL 1. The functioning of Adipo R1 and R2 need to be suppressed for the decreased sensitivity of the fat inducer adiponectin^[3]. Nanobodies are synthesized that contains high concentration of APPL1 that will not allow the binding of Adipo receptors to the adiponectin protein^{[4][5]}. The concentration of engineered nanobodies were then determined by ELISA technique^[6]. These nanobodies were then injected in the fetal cells and after 24–48 hours, the concentration was determined. Low levels of adiponectin were observed due to failed interaction with the adipo receptors. This review focusses on the action of engineered nanobodies on the adiponectin protein and its effect on the obesity.

Keywords: Adiponectin, ADIPOQ, Adipo R1 and R2, APPL1, ELISA, nanobodies,obesity.

References:

1. Masuyama, H. and Hiramatsu, Y., 2012. Effects of a high-fat diet exposure in utero on the metabolic syndrome-like phenomenon in mouse offspring through epigenetic changes in adipocytokine gene expression. *Endocrinology*, 153(6), pp.2823–2830.
2. A genetic analysis identifies a haplotype at adiponectin locus: Association with obesity and type 2 diabetes
3. Chandran, M., Phillips, S.A., Ciaraldi, T. and Henry, R.R., 2003. Adiponectin: more than just another fat cell hormone?. *Diabetes care*, 26(8), pp.2442–2450.
4. Nigro, E., Scudiero, O., Monaco, M.L., Palmieri, A., Mazzarella, G., Costagliola, C., Bianco, A. and Daniele, A., 2014. New insight into adiponectin role in obesity and obesity-related diseases. *BioMed research international*, 2014.
5. Engin, A., 2017. Adiponectin-resistance in obesity. *Obesity and lipotoxicity*, pp.415441.
6. Pardon, E., Laeremans, T., Triest, S., Rasmussen, S.G., Wohlkönig, A., Ruf, A., Muyldermans, S., Hol, W.G., Kobilka, B.K. and Steyaert, J., 2014. A general protocol for the generation of Nanobodies for structural biology. *Nature protocols*, 9(3), pp.674–693.

akankshaasingh1998@gmail.com