Chlorella pituita for an Obesity Free World; By Regulating Obesogen Activity

Goyal, Tanya (School: Maharaja Agarsain Public School)
Mangalam Chamu, Sharen Ganesh (School: Maharaja Agarsain Public School)

A medical condition due to excess accumulation of fats in human body leading to a BMI =30 kg/m2 is termed as Obesity. According to WHO, obesity has nearly tripled since 1975 worldwide. While sedentary lifestyle and an unhealthy diet may contribute to obesity, people often overlook other factors such as Obesogens which are equally responsible for the rise of obesity. Obesogens are a class of Endocrine disruptors; chemicals that inappropriately alter lipid homeostasis, change metabolic set points, modify the regulation of appetite and satiety to promote fat accumulation. They are found abundantly in the environment including plastic bottles, metal food cans, detergents etc and thus it is impossible to avoid them. The project aims at regulating obesity due to Obesogens using Chlorella pituita, a fresh water alga which is also a potential food source because it is high in protein and other essential nutrients. The alga was checked for its toxicity on HEK 293T cell line. To study the effect of C.pituita, mice fibroblast cell line 3T3-L1 was induced with Polychlorinated biphenyl (PCB), a very common obesogen and were further treated with C.pituita. Four experiments including Oil-red O staining for lipid accumulation, triglyceride assay to check fat storage and expression of genes associated with adipogenesis and fat accumulation were conducted using standard protocol. The results showed regulation of genes against the activation induced by the Obesogens. One-Way ANOVA proved results to be significant. Thus, C.pituita can be used as a cost effective and potent regulator against the changes induced by the Obesogens causing obesity.

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