Vitamin B12 Supplements May Reduce Diabetes Risk (18-03-2018)

New Delhi, 17 March 2018: Vitamin B12 is the perfect example of the phrase “small yet powerful”. Though just 2 microgram is required per day, it has now been shown to have a major influence on type 2 diabetes.

Researchers from CSIR-Centre for Cellular and Molecular Biology (CCMB), Hyderabad along with scientists from Pune, Singapore and UK studied the molecular pathway to understand how B12 supplements are associated with Type 2 diabetes and its associated genes.

“Previous studies from our lab have shown that B12 supplementation for a year was able to bring down the level of homocysteine (a marker for cardiovascular diseases). Indians in general have low levels of B12, possibly due to vegetarian diet.We wanted to explore further as we know that B12 plays an important role in many reactions of the body and influences risk for many diseases including cardio-metabolic disorders,” says Dr. Giriraj R. Chandak, scientist at CSIR-CCMB and corresponding author of the paper published in *Epigenomics.*

The study involved 108 children from the Pune maternal nutrition study (PMNS). The children were randomly divided into four groups. One group was not given any supplements while the second was given B12 supplements (10 microgram/day), third B12 with folic acid (known to influence homocysteine levels) and fourth only folic acid.

After a year, their blood samples were collected and genomic DNA was isolated and studied for differences before and after supplementation.

“We found that B12 was a crucial factor in the one-carbon metabolic cycle of the body which determines the levels of different proteins by regulating methylation of their genes. The expression of various genes associated with diabetes was found to be less by methylation. We found four top genes that were associated with diabetes to be less expressed(downregulated),” he adds.

“Bioinformatics study helped us to identify the location of the genes and further human cell culture studies were carried out to validate the results. Other studies are ongoing in the lab to understand more about how B12 affects the molecular network and signaling pathway of the genes associated with Type 2 diabetes,” says Dr Smeeta Shrestha, postdoctoral fellow and coauthor from CCMB. “Almost 40-70% of the Indian population is vitamin B12 deficient. We don’t give it much importance as it is a micronutrient. But this study clearly provides evidence that a micronutrient can immensely influence the risk for a commonly occurring disease like diabetes B12 can be obtained from foods like meat, fish, eggs, dairy products, green leafy vegetables,” says Dr. Chandak.