Calorie restriction triggers the ability of EGCG to boost Nrf2 in the hepatocytes of aged rat: can combination of CR with antioxidants enroute anti-aging?

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From National Conference on Interdisciplinary Research and Innovations in Biosciences, NATCON -2018. Post Graduate & Research Department of Biochemistry, Mohamed Sathak College of Arts & Science, Sholinganallur, Chennai-600119, India. 24th & 25th January 2018.

American J of Bio-pharm Biochem and Life Sci 2018 January, Vol. 4 (Suppl 1): **PP17**

ABSTRACT

Aging is caused by the accumulation of damage inflicted by reactive oxygen species (ROS) and their harmful effects are seen typically as a result of compromised signaling, rather than due to direct damage to cellular machinery. Curtailing energy intake or calorie restriction will have a greater impact on the oxidative stress, obesity and thus aging. Albeit, calorie restriction could reduce the ROS production, the produced ROS might not be effectively detoxified as the endogenous antioxidant machinery is malfunctioning during aging. Therefore, this study aims to comprehend the combinatorial efficacy of EGCG along with calorie restriction on the status of Nrf2, a transcription factor involved in the regulation of antioxidant defense system in male Wistar rats. The results showed that EGCG up-regulates the antioxidant status in the *ad libitum* fed rats. However, its beneficial effect can be enhanced when combined with a calorie restricted diet. This preliminary finding paves a way for combinatorial approach in replenishing the antioxidant status during aging and thereby reducing the risk for age associated degenerative diseases.

Published: February 2018.