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Allicin from garlic having beneficial effects in combating diseases

Introduction & Aim: The relationship between Reactive Oxygen Species (ROS) and various diseases like metabolic cardiac disorders, osteoporosis, tuberculosis and cancer and are well documented. The present study involves the employment of a natural compound namely allicin from garlic having anti-oxidant and anti-inflammatory properties with proven health benefits. Our preliminary observations appear to possibly provide some scientific input that may be useful in the management of Ischemic Heart Disease (IHD), osteoporosis, tuberculosis and cancer.

Method: Peripheral Blood Mononuclear Cells (PBMC's) were isolated by density gradient method from blood of patients with Ischemic Heart Disease (IHD), osteoporosis, tuberculosis and cancer (n=20 each) and were employed in culture studies with and without of varying doses of allicin (0-500 ng/ml). The 24 hr cultures were probed for CK, sTNF-alpha, sRANKL levels as well as for Glutathione Peroxidase (GPx) activity.

Result: Cells were collected after 24 hours with and without allicin (0-500 ng/ml; n=20 each). An appreciably suppressed GPx activity was recorded in cell cultures of patient's with IHD, osteoporosis, tuberculosis and cancer when compared to samples of healthy controls where the GPx data reflects upon the compromised defense system in patients with Ischemic Heart Disease (IHD). On the contrary, treatment or co-culturing with varying doses of allicin (0-500 ng/ml) exhibited a remarkable degree of amelioration in GPx activity in cells of all the above four types of diseased patients. Next, the ELISA data showed that the 24 hr culture supernatants of untreated patients cells were having augmented expressions of sTNF-alpha, which upon co-culturing with 500 ng/ml of allicin resulted in an appreciable degree of downregulation/suppression in the expressions of sTNF-alpha in cells of all the above four types of diseased patients. Cultures from all patient types exhibited a dose dependent suppression with allicin. Similarly, in IHD patients, in comparison to untreated controls, a dose dependent decrease in CK levels were observed in cultures receiving allicin (0-500 ng/ml; n=10). Also, in cell cultures from osteoporosis patients, allicin (0-500 ng/ml), showed an appreciable degree of downregulation in sRANKL.

Conclusion: The encouraging preliminary data suggested that in-depth studies are required at the molecular level, which in turn, may provide information for possibly employing allicin as potential adjunct in the management of Ischemic Heart Disease (IHD), osteoporosis, tuberculosis and cancer.

Biography

Najmul Islam is currently working as a Professor in Biochemistry, Faculty of Medicine, Aligarh Muslim University, India. He was the Former Head of the Department of Biochemistry. He has worked for four years in the Division of Infectious Diseases and Department of Rheumatology, Case Eastern Reserve University, Cleveland, Ohio, USA. He was Joint Secretary in 2012-13, Vice President, 2014 and President, 2015 of Indian Academy of Biomedical Sciences, Lucknow. He has published more than 70 papers/articles in reputed journals and has been serving as an Editorial Board Member of repute.

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