OMICS International
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J Pharma Care Health Sys 2015, 2:4
http://dx.doi.org/10.4172/2376-0419.S1.003

Global Pharma Summit

August 10-12, 2015 Philadelphia, USA

Bioenergetics pathways, metabolism and the intrinsic chemistry of melanin

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Metabolic processes are constantly taking place in our body no matter whether we eat, sleep or exercise. The study of metabolism has a long history, with the first scientific article dating back to the 17th century. Currently, nearly six million articles on metabolism have been published. We can, however not fully understand metabolism overall if we study the individual parts of the network of reactions. In the case of metabolism, we therefore need to know how the reactions and the enzymes catalyzing them fit together and act as a whole. To this end, metabolic pathway databases have been developed, however of the nearly 7,000 reactions already known only 199 reactions are common to all databases. The tricarboxylic acid (TCA) cycle, theoretically a key reaction in energy generation, showed considerable disagreement between databases. Thereby, integrating the knowledge contained in the various databases is easier said than done. In spite different explanations for the lack of consensus between the databases of the metabolic network, problem persists. However, we believe that the main problem is the ancient dogma of think about glucose as source of energy. In accordance with our research, glucose is source of carbon chains, of biomass only, but not energy source. Our finding of the intrinsic property of melanin to transform energy light into chemical energy breaks the ground. Plants have two bioenergetic organelles: Chloroplasts and mitochondria, and human being have melanosomas and mitochondria.

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Green tea extract: Its potential protective effect on bleomycin induced lung injuries in rats

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Lung fibrosis is a common side effect of the chemotherapeutic agent, bleomycin. Current evidence suggests that reactive oxygen species may play a key role in the development of lung fibrosis. The present work studied the effect of green tea extract on bleomycin–induced lung fibrosis in rats. Animals were divided into three groups: (1) Saline control group; (2) bleomycin group in which rats were injected with bleomycin (15 mg/kg, i.p.) three times a week for four weeks; (3) bleomycin and green tea group in which green tea extract was given to rats (100 mg/kg/day, p.o) a week prior to bleomycin and daily during bleomycin injections for 4 weeks until the end of the experiment. Bleomycin–induced pulmonary injury and lung fibrosis that was indicated by increased lung hydroxyproline content, elevated nitric oxide synthase, myeoloperoxidase (MPO), platelet activating factor (PAF), tumor necrosis factor α (TNF_α), transforming growth factor 1β (TGF1β) and angiotensin converting enzyme (ACE) activity in lung tissues. On the other hand, bleomycin induced a reduction in reduced glutathione concentration (GSH). Moreover, bleomycin resulted in severe histological changes in lung tissues revealed as lymphocytes and neutrophils infiltration, increased collagen deposition and fibrosis. Co-administration of bleomycin and green tea extract reduced bleomycin–induced lung injury as evaluated by the significant reduction in hydroxyproline content, nitric oxide synthase activity, levels of MPO, PAF & TNF-α & ACE in lung tissues. Furthermore, green tea extracts ameliorated bleomycin– induced reduction in GSH concentration. Finally, histological evidences supported the ability of green tea extract to attenuate bleomycin–induced lung fibrosis and consolidation. Thus, the finding of the present study shows that green tea may serve as a novel target for potential therapeutic treatment of lung fibrosis.

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