

5th World Congress on **Cell & Stem Cell Research**

March 23-25, 2015 DoubleTree by Hilton Chicago - North Shore, USA

Hydroxybenzoic acid isomers and the cardiovascular system

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Today we are beginning to understand how phytochemicals can influence metabolism, cellular signaling and gene expression. The hydroxybenzoic acids are related to salicylic acid and salicin, the first compounds isolated that have a pharmacological activity. In this review we examine how a number of hydroxyphenolics have the potential to ameliorate cardiovascular problems related to aging such as hypertension, atherosclerosis and dyslipidemia. The compounds focused upon include 2,3-dihydroxybenzoic acid (Pyrocatechuic acid), 2, 5-dihydroxybenzoic acid (Gentisic acid), 3, 4-dihydroxybenzoic acid (Protocatechuic acid), 3, 5-dihydroxybenzoic acid (α -Resorcylic acid) and 3-monohydroxybenzoic acid. The latter two compounds activate the hydroxycarboxylic acid receptors with a consequence there is a reduction in adipocyte lipolysis with potential improvements of blood lipid profiles. Several of the other compounds can activate the Nrf2 signaling pathway that increases the expression of antioxidant enzymes, thereby decreasing oxidative stress and associated problems such as endothelial dysfunction that leads to hypertension as well as decreasing generalized inflammation that can lead to problems such as atherosclerosis. It has been known for many years that increased consumption of fruits and vegetables promotes health. We are beginning to understand how specific phytochemicals are responsible for such therapeutic effects. Hippocrates' dictum of 'Let food be your medicine and medicine your food' can now be experimentally tested and the results of such experiments will enhance the ability of nutritionists to devise specific health-promoting diets.

Biography

Basmah AlTinawi, Third year Bachelor of Medicine, Bachelor of Surgery student at Alfaisal University, Riyadh KSA. She is involved in research since her first year in medicine and has three published papers in well-respected journals: Nutritional Journal, Austin Anatomy Journal and Medical Teacher. Worked with Paul Ganguly, Bernhard Juurlink, on DHBA using Chromatography techniques "HPLC" with EC system. She went to (University of Mississippi Medical Center) UMMC, USA 2013 worked in a basic genetic with Michael R. Garrett on MHY15 gene location. Currently, she is the research head in a cancer support group "SMILE, You Are Blessed" and starting a clinical research project in KFSH.RC, King Faisal Specialist Hospital and Research Center with Fatimah S. Alhamlan, working on AU campus labs with Dr. Ahmed Yaqinuddin on the miRNA in blood for differential diagnosis of different types of cancer. In 2014, she had done summer electives in KFSH, KSA in Cardiac surgery under mentorship of Zohair Al Halees, a well-known figure in Cardiac surgery in the world. She is active in many extracurricular activities and is part of leading initiatives in volunteering and community service teams such as "The Change Team", the Medical Student Association of Alfaisal University.

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