

3rd International Conference and Exhibition on **FOOD Processing & Technology** July 21-23, 2014 Hampton Inn Tropicana, Las Vegas, USA

Olive biophenols in epigenetic alteration

Syed Haris Omar Charles Sturt University, Australia

Over the past decade, there has been increasing evidence that epigenetic mechanisms play a pivotal role in aging and the pathogenesis of Alzheimer's disease. DNA methylation/demethylation and histone modifications are controlled by specific enzymes, such as DNA methyltransferase (DNMT), histone acetyltransferase (HAT), and histone deacetylase (HDAC), and have a close relationship with the memory impairment. HDAC inhibitors have great potential not only to treat cognitive impairment resulting from neurodevelopmental and neurodegenerative disorders but also to serve as cognitive enhancers for the cognitively healthy. In this in vitro study, we investigated the inhibitory effects of olive biophenols including flavonoids (quercetin, rutin, luteolin) and non-flavonoids (oleuropein, hydroxytyrosol, verbascoside, caffeic acid) against HDAC using fluorescence-based method for measuring Class I and II HDAC activity. Biophenols in various concentrations were mixed with HeLa nuclear extract (5 mg/ml) and HDAC fluorometric substrate, which comprises an acetylated lysine side chain. Deacetylation of the substrate sensitizes it, while treatment with the lysine developer produces a fluorophore which was analyzed using a plate reader (excitation wavelengths of 340-360 nm and emission wavelengths of 440-465 nm). Many biophenols inhibited HDC activity, both flavonoids (with quercetin showing the highest HDAC inhibition (IC50 105.1µM) followed by rutin (IC50 128.8µM)), and non- flavonoids (Verbascoside showed highest HDAC inhibition (IC50 188.6µM) followed by caffeic acid, hydroxytyrosol and oleuropein). Animal and human studies are required to confirm these results, but they suggest that olive biophenols could be promising protectors against epigenetic factors in the development of Alzheimer's disease.

Biography

Syed Haris Omar is a registered Pharmacist and a PhD student from school of Biomedical Sciences, Charles Sturt University, Australia. He has published more than 16 papers in reputed journals including book chapters and has been serving as an editorial board member of repute. Currently, he is member of various scientific societies including American Chemical Society (ACS), American Association for the Advancement of Science (AAAS), Phytochemical Society of Europe (PSE), European Brain and Behaviour Society (EBBS).

somar@csu.edu.au