J Horta Marron et al., J Biotechnol Biomater 2018, Volume: 8
DOI: 10.4172/2155-952X-C7-107

Synthesis structural characterization and antioxidant activity of alkyltrimethylammonium thiotungstate

J Horta Marron and **LB Romero Sanchez**
Autonomous University of Baja California, Mexico

An emerging area of research in the field of oxidative stress is the use of inorganic drugs, possessing redox properties, which act as effective free radical scavengers, a starting point for the development of new therapies to combat oxidative damage. In this way, it was found in the literature that some ammonium thiosalts, as tetrathiomolybdate (TMA), have anticancer, anti-angiogenic, antioxidant, anti-inflammatory and have been tried as copper-chelator drugs, including preclinical, animal and human studies. Although the biological activity of TMA suggests that related inorganic species such as thiotungstate salts might show analogous behavior, to the author's knowledge, the biological activity of tungstate thiosalts has not been evaluated. In this work, ammonium thiotungstate (TTA) were synthesized, characterized and their antioxidant activity was evaluated. In addition, an alkyl chain was incorporated into TTA and the influence of carbon on biological activity was evaluated. TTA was prepared by direct sulfidation in an aqueous ammonia solution of ammonium metatungstate. The alkyltrimethylammonium thiotungstate $(R\text{-}(CH_3)_3N)_2WS_4$ (R=octyl, dodecyl or hexadecyl) were prepared by means of a simple reaction of ATT with alkyltrimethylammonium halogens in aqueous solution. The synthesized thiotungstates were characterized using Fourier transform infrared (FTIR) and ultraviolet (UV) spectroscopic techniques for determining their chemical structures. Thiotungstate salts antioxidant activity was evaluated using DPPH and ABTS assays. The preliminary results suggest that the influence of carbon derived from the hydrocarbon chain on the properties of the resulting biomaterials improved their antioxidant activity.

Biography

J Horta Marron has earned his Bachelor's degree in Industrial Chemistry from the Autonomous University of Baja California and is currently working on research. He has worked as a quality control technician in several Mexican industries such as petrochemical, alimentary and water waste. He has also collaborated with various Mexican researchers on projects involving nanotechnology and environmental sciences. Recently, he participated in the Congress of the Faculty of Chemical Engineering located in the Autonomous University of Yucatán where he presented a ceramic material created from sewage sludge.

lilian.beatriz.romero.sanchez@uabc.edu.mx

Notes: