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EDITORIAL NOTE

Mitochondrial DNA, anti-tuberculosis drugs-induced hepatotoxicity and Alzheimer's disease

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The present issue of the *Annals of the Brazilian Academy of Sciences* (AABC) harbors various interesting manuscripts. For instance, Siqueira et al. demonstrates the common mutations in mitochondrial DNA (mtDNA) from rat heart exposed to radiation. mtDNA is responsible for the expression of several subunits of respiratory chain complexes, which ultimately leads to ATP production, the most important energy currency of the cell. It is well known that alterations in mitochondrial functions, such as activity and expression of respiratory chain complexes, are involved in the pathophysiology of common degenerative diseases, such as Alzheimer's disease (Biffi et al. in press), Parkinson's disease (Gatt et al. 2013), diabetes (Watanabe et al. in press), sepsis (Bozza et al. 2013), and inherited metabolic disorders (Wajner and Goodman 2011).

Moreover, in this current issue, Brito et al. presented significant data showing the most frequent polymorphisms and their involvement in important enzymes for detoxification of anti-tuberculosis drugs (ATD), such as encoding genes for cytochrome P450 2E1, glutathione S-transferase, and N-acetyltranferase (Roy et al. 2001, Leiro et al. 2008). They showed that an alteration in the gene that encodes N-acetyltranferase slows the acetylator profile, which might play an important role in the ATD-induced hepatotoxicity.

Alzheimer's disease (AD) is one of the most frequent neurodegenerative disorders in aging, affecting cognitive functions. Many studies have demonstrated the role of acetylcholinesterase, an important enzyme related to memory and learning processes (D'Addario et al. 2012), in the pathophysiology of this disease, and anti-cholinesterase inhibitors are widely used for the treatment of AD (Aisen et al. 2012). In this scenario, many natural-occurring acetylcholinesterase inhibitors have been identified, such as physostigmine, galanthamine, and hyperzine A (Orhan et al. 2009). In the present issue, Hajimehdipoor and colleagues demonstrated that the sesquiterpens lactones obtained from *Inula oculus christi* and *I. aucheriana*, gailardin and pulchelin C, exerts inhibitory effects on acetylcholinesterase activity. They suggested that acetylcholinesterase inhibitors from natural sources are potential medicines for AD treatment. By compiling these manuscripts, we hope to enrich AABC readers with regards to novelty advances on various fields of researches.

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