

This document does not have an outline.

ADVERTISEMENT



Biochimica et Biophysica Acta (BBA) - Bioenergetics

Volume 1837, Supplement, July 2014, Pages e60

2014 EBEC abstracts



Mentha aquatica L. extract effects on mitochondrial bioenergetics

Fernanda M. Ferreira^a, F.M. Ferreira^b, O.R. Pereira^c, S.M. Cardoso^d, P.J. Oliveira^e, A.J.M. Moreno^f

[Show more](#)

DOI: 10.1016/j.bbabi.2014.05.233

[Get rights and content](#)

Mentha aquatica (water mint) extracts are regularly used in food flavoring and pharmacology. In the present study, the possible effects of an ethanolic extract from leaves of *M. aquatica* L. on rat liver mitochondria bioenergetics were evaluated.

The plant extract (25 $\mu\text{g}\cdot\text{mg protein}^{-1}$) but not the vehicle, inhibited the mitochondrial oxidative system, as seen by a depression of respiration (state 3, respiratory control ratio (RCR), FCCP-stimulated respiration) and lower generation of the transmembrane electric potential using glutamate + malate and succinate as respiratory substrates. The depressing effects in oxidative phosphorylation can probably be related with the polyphenolic composition of the extract (mainly eriodictyol-7-O-rutinoside, luteolin-7-O-rutinoside, naringenin-7-O-rutinoside, hesperitin-7-O-rutinoside and rosmarinic acid) that can interact with membrane and change the inner mitochondrial membrane lipidic moiety. Despite decreasing the RCR, the presence of *M. aquatica* extract did not affect the mitochondrial phosphorylative capacity, as estimated by the ADP/O ratio. No significant increase in inner mitochondrial membrane permeability was observed and induction of mitochondrial permeability transition pore was not altered in the range of concentrations tested (up to 25 $\mu\text{g}\cdot\text{mg protein}^{-1}$) either. For the highest concentrations tested (25 $\mu\text{g}\cdot\text{mg protein}^{-1}$ or higher) the inhibition observed on the mitochondrial respiratory chain, as reflected by FCCP-stimulated respiration, revealed that *M. aquatica* ethanolic extract is toxic for mitochondrial bioenergetics. In conclusion, the present study suggests that a high daily consumption of an ethanolic extract of *M. aquatica* leaves should be regarded as hazardous. Acknowledgements: FCOMP-01-0124-FEDER-022696 to CITAB; PEst-OE/AGR/UI0681/2014 to CERNAS, and PEst-C/SAU/LA0001/2013-2014 to the CNC, co-funded by FEDER/Compete and National Budget.

Copyright © 2014 Published by Elsevier B.V.

[About ScienceDirect](#)
[Terms and conditions](#)

[Contact and support](#)
[Privacy policy](#)

[Information for advertisers](#)

ELSEVIER

Copyright © 2014 Elsevier B.V. except certain content provided by third parties. ScienceDirect® is a registered trademark of Elsevier B.V.

Cookies are used by this site. To decline or learn more, visit our [Cookies](#) page

[Switch to Mobile Site](#)

This article belongs to a special issue

No articles found.

Recommended articles

Citing articles (0)

Related book content

