



# Document details

< Back to results | 1 of 1

↗ Export ↴ Download 🖨 Print ✉ E-mail 📄 Save to PDF ☆ Add to List More... >

[Full Text](#) View at Publisher

International Journal of Nutrition, Pharmacology, Neurological Diseases  
Volume 10, Issue 2, April-June 2020, Pages 35-42

## Neuroprotective Effects of Co-administration of Coenzyme Q10 and Vitamin-E in Chronic Cerebral Hypoperfusion-Induced Neurodegeneration in Rats (Article)

Azimi, M.<sup>a,b</sup>, Ashour, A.E.<sup>a</sup>, Fuaat, A.A.<sup>a</sup>, Mohamed, W.M.Y.<sup>a,c</sup> ✉ 👤

<sup>a</sup>Department of Basic Medical Sciences, Kulliyah of Medicine, International Islamic University Malaysia (IIUM), Kuantan, Pahang, Malaysia

<sup>b</sup>Clinical Pharmacology Department, Kabul University of Medical Sciences, Kabul, Afghanistan

<sup>c</sup>Clinical Pharmacology Department, Menoufia Medical School, Menoufia University, Egypt

### Abstract

↕ View references (38)

Alzheimer's disease (AD) is the most common type of neurodegenerative diseases. Currently, there is no prevention or cure for AD. The potential use of natural antioxidants for prevention and treatment of AD has attracted considerable attention. Here, we used combination of the antioxidants coenzyme Q10 (CoQ10) and vitamin-E (Vit E) for the protection against AD. The current study assessed the neuroprotective effects of combination of CoQ10 with Vit E in Chronic Cerebral Hypoperfusion-induced neurodegeneration (CCH-ND) rat model. After acclimatization, 27 Sprague Dawley rats weighing 220-250 g were divided into six groups; sham control, 2-vessel occlusion (2VO), 2VO+E (treated daily with Vit E, 100 mg/kg, orally following 2VO), CoQ10 (treated daily with CoQ10, 200 mg/kg, orally following 2VO), CoQ10+E (treated with combination of CoQ10 and Vit E, orally following 2VO) and last group was treated with coconut-oil as a vehicle control. On the 8th week, all rats were tested by Morris water maze cognitive test and then euthanized and the hippocampi were isolated. Viable neuronal cell count in the hippocampal region was estimated. The Isoprostane F2 (F2-IsoPs) levels were assessed in the brain homogenates to quantify the oxidative stress status. There was significant difference in neuronal cell death, memory and learning, and F2-Iso level in untreated 2VO group compared to the treated and sham groups. However, there was no statistically significant difference in neuroprotective effects of combination of Vit E with CoQ10 and each one alone. To conclude, combination of the antioxidants (Vit E and CoQ10) improves memory, neuronal cell viability and decreases antioxidant level, same as each antioxidant alone. © 2020 International Journal of Nutrition, Pharmacology, Neurological Diseases | Published by Wolters Kluwer-Medknow.

### SciVal Topic Prominence ⓘ

Topic: Vascular Dementia | Ameroid | White Matter

Prominence percentile: 90.585 ⓘ

### Author keywords

Alzheimer's disease cerebral hypoperfusion coenzyme Q10 combination of antioxidants Vitamin E

### Indexed keywords

Metrics ⓘ View all metrics >

Cited by 0 documents

Inform me when this document is cited in Scopus:

[Set citation alert >](#)

### Related documents

Oxidative Stress Status and Neuroprotection of Tocotrienols in Chronic Cerebral Hypoperfusion-Induced Neurodegeneration Rat Animal Model

Mohamed, W.M.Y. , Sayeed, S. , Saxena, A.K. (2018) *International Journal of Nutrition, Pharmacology, Neurological Diseases*

Carvacrol suppresses learning and memory dysfunction and hippocampal damages caused by chronic cerebral hypoperfusion

Shahrokhi Raeini, A. , Hafizibarjin, Z. , Rezvani, M.E. (2020) *Naunyn-Schmiedeberg's Archives of Pharmacology*

Role of neovibsanin scaffold in preservation of spatial cognitive functions of rats with chronic epilepsy

Dong, L.-Q. , Yan, L.-L. , Pan, X.-D. (2015) *International Journal of Clinical and Experimental Pathology*

View all related documents based on references

Find more related documents in Scopus based on:

Authors > Keywords >

EMTREE drug terms:

alpha tocopherol isoprostane derivative neuroprotective agent ubidecarenone

EMTREE medical terms:

animal experiment animal model animal tissue Article brain homogenate  
brain perfusion carotid artery cell death cell viability controlled study hippocampus  
learning male Morris water maze test nerve cell nerve degeneration neuropathology  
neuroprotection nonhuman oxidative stress rat rat model reference memory  
sternum

---

### Chemicals and CAS Registry Numbers:

alpha tocopherol, 1406-18-4, 1406-70-8, 52225-20-4, 58-95-7, 59-02-9; ubidecarenone, 303-98-0

---

### Drug tradename:

ubiquinone 10

---

ISSN: 22310738

Source Type: Journal

Original language: English

DOI: 10.4103/ijnpnd.ijnpnd\_79\_19

Document Type: Article

Publisher: Wolters Kluwer Medknow Publications

---

### References (38)

[View in search results format >](#)

All [Export](#) [Print](#) [E-mail](#) [Save to PDF](#) [Create bibliography](#)

- 1 Amor, S., Puentes, F., Baker, D., Van Der Valk, P.  
**Inflammation in neurodegenerative diseases** ([Open Access](#))  
(2010) *Immunology*, 129 (2), pp. 154-169. Cited 738 times.  
doi: 10.1111/j.1365-2567.2009.03225.x  
[View at Publisher](#)
- 
- 2 Chen, X., Guo, C., Kong, J.  
**Oxidative stress in neurodegenerative diseases**  
(2012) *Neural Regeneration Research*, 7 (5), pp. 376-385. Cited 215 times.  
[www.nrronline.org](http://www.nrronline.org)
- 
- 3 Kim, G.H., Kim, J.E., Rhie, S.J., Yoon, S.  
**The Role of Oxidative Stress in Neurodegenerative Diseases**  
(2015) *Experimental Neurobiology*, 24 (4), pp. 325-340. Cited 501 times.  
<https://www.en-journal.org/journal/view.html?uid=284&vmd=Full>  
doi: 10.5607/en.2015.24.4.325  
[View at Publisher](#)

- 
- 4 Kongburan, W., Chignell, M., Chan, J.  
**Distillation of Knowledge from the Research Literature on Alzheimer's Dementia**  
(2017) *Proceedings of the 26th International Conference on World Wide Web Companion*.  
International World Wide Web Conferences Steering Committee
-