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(54) Title: TREATMENT OF MITOCHONDRIAL DISEASES WITH NAPHTHOQUINONES

(57) Abstract: Methods of treating, preventing or suppressing symptoms associated with mitochondrial diseases, such as Friedreich's ataxia (FRDA), Leber's Hereditary Optic Neuropathy (LHON), dominant optic atrophy (DOA); mitochondrial myopathy, encephalopathy, lacticidosis, stroke (MELAS), Leigh syndrome or Kearns-Sayre Syndrome (KSS) with compounds of Formula (I) are disclosed. Methods of modulating, normalizing, or enhancing energy biomarkers, as well as compounds useful for such methods are also disclosed.



INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - C07C 50/00 (2011.01) USPC - 552/296 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC(8)- C07C 50/00 (2011.01); USPC- 552/296 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC- 514/682-683, 514/690; 552/293, 295, 299 Patents and NPL (classification, keyword; search terms below) Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PubWEST (USPT, PGPB, EPAB, JPAB), GoogleScholar (PL, NPL), FreePatentsOnline (US Pat, PgPub, EPO, JPO, WIPO, NPL); search terms: naphthoquinone, mitochondria, tetramethylhexadeca, quinone, hexadeca, alkyl		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2010/0063161 A1 (MILLER et al.) 11 March 2010 (11.03.2010), para [0023]-[0027], [0091]	1-30
Y	US 2010/0062065 A1 (JO et al.) 11 March 2010 (11.03.2010), para [0010]-[0014], [0103], [0106]	1-30
A, P	US 2011/0172312 A1 (MILLER et al.) 14 July 2011 (14.07.2011), para [0006]-[0132]	1-30
A	US 2006/0281809 A1 (MILLER et al.) 14 December 2006 (14.12.2006), para [0016]-[0180]	1-30
A	US 2004/0087527 A1 (DAY et al.) 06 May 2004 (06.05.2004), para [0015]-[0300]	1-30
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
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Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774