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Neurotoxicity Research
Volume 35, Issue 4, 15 May 2019, Pages 987-992

siRNA Blocking of Mammalian Target of Rapamycin (mTOR) Attenuates Pathology in Annonacin-Induced Tauopathy in Mice (Article)

Salama, M.[a,b], El-Desouky, S.[a], Alsayed, A.[a], El-Hussiny, M.[a], Magdy, K.[a], Fekry, E.[b], Shabka, O.[b], El-khodery, S.A.[c], Youssef, M.A.[c], Sobh, M.[d], Mohamed, W.[e,f]

[a]Medical Experimental Research Center (MERC), Faculty of Medicine, Mansoura University, Elgomhourya street, Mansoura, 36551, Egypt
[b]Toxicology Department, Faculty of Medicine, Mansoura University, Mansoura, Egypt
[c]Internal Medicine Department, Faculty of Veterinary Medicine, Mansoura University, Mansoura, Egypt

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Abstract

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Tauopathy is a pathological hallmark of many neurodegenerative diseases. It is characterized by abnormal aggregates of pathological phosphotau and somatodendritic redistribution. One suggested strategy for treating tauopathy is to stimulate autophagy, hence, getting rid of these pathological protein aggregates. One key controller of autophagy is mTOR. Since stimulation of mTOR leads to inhibition of autophagy, inhibitors of mTOR will cause stimulation of autophagy process. In this report, tauopathy was induced in mice using annonacin. Blocking of mTOR was achieved through stereotaxic injection of siRNA against mTOR. The behavioral and immunohistochemical evaluation revealed the development of tauopathy model as proven by deterioration of behavioral performance in open field test and significant tau aggregates in annonacin-treated mice . Blocking of mTOR revealed significant clearance of tau aggregates in the injected side; however, tau expression was not affected by mTOR blockage. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.

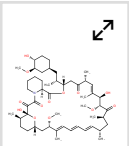
SciVal Topic Prominence

Topic: Tauopathies | Alzheimer Disease | Tau oligomers

Prominence percentile: 99.684

Chemistry database information

Substances



Author keywords

Autophagy mTOR Neurodegeneration siRNA Tauopathy

Indexed keywords

EMTREE drug terms: annonacin mammalian target of rapamycin small interfering RNA furan derivative lactone mTOR protein, mouse small interfering RNA target of rapamycin kinase

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EMTREE medical terms:

animal experiment | animal model | animal tissue | Article | autophagy | controlled study | deterioration | enzyme activation | enzyme inhibition | immunohistochemistry | male | mouse | nonhuman | priority journal | protein aggregation | protein expression | protein function | protein targeting | reverse transcription polymerase chain reaction | tauopathy | animal | antagonists and inhibitors | brain | C57BL mouse | chemically induced | metabolism | nerve cell | pathology | proteinosis | tauopathy

MeSH:

Animals | Autophagy | Brain | Furans | Lactones | Male | Mice , Inbred C57BL | Neurons | Protein Aggregation, Pathological | RNA, Small Interfering | Tauopathies | TOR Serine-Threonine Kinases

Chemicals and CAS Registry Numbers:

annonacin, 111035-65-5; lactone, 1338-03-0; target of rapamycin kinase, 171715-28-9;

annonacin; Furans; Lactones; mTOR protein, mouse; RNA, Small Interfering; TOR Serine-Threonine Kinases

Funding details

Funding sponsor	Funding number	Acronym
Science and Technology Development Fund	13892	

Funding text

Funding information The present work was supported by a grant from the Science and Technology Development Fund (STDF), Egypt (BARG: 13892; MS).

ISSN: 10298428
CODEN: NURRF
Source Type: Journal
Original language: English
DOI: 10.1007/s12640-018-9974-3
PubMed ID: 30362086
Document Type: Article
Publisher: Springer New York LLC

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Salama, M.; Medical Experimental Research Center (MERC), Faculty of Medicine, Mansoura University, Elgomhourya street, Mansoura, Egypt; email:toxicsalama@hotmail.com