Vitamin E

D'Eustachio, P., Jassal, B.

European Bioinformatics Institute, New York University Langone Medical Center, Ontario Institute for Cancer Research, Oregon Health and Science University.

The contents of this document may be freely copied and distributed in any media, provided the authors, plus the institutions, are credited, as stated under the terms of Creative Commons Attribution 4.0 International (CC BY 4.0) License. For more information see our license.

22/01/2020
**Introduction**

Reactome is open-source, open access, manually curated and peer-reviewed pathway database. Pathway annotations are authored by expert biologists, in collaboration with Reactome editorial staff and cross-referenced to many bioinformatics databases. A system of evidence tracking ensures that all assertions are backed up by the primary literature. Reactome is used by clinicians, geneticists, genomics researchers, and molecular biologists to interpret the results of high-throughput experimental studies, by bioinformaticians seeking to develop novel algorithms for mining knowledge from genomic studies, and by systems biologists building predictive models of normal and disease variant pathways.

The development of Reactome is supported by grants from the US National Institutes of Health (P41 HG003751), University of Toronto (CFREF Medicine by Design), European Union (EU STRP, EMI-CD), and the European Molecular Biology Laboratory (EBI Industry program).

**Literature references**


Reactome database release: 71

This document contains 1 pathway and 2 reactions (see Table of Contents)
Vitamins A, D, E and K are lipophilic compounds, the so-called fat-soluble vitamins. Because of their lipophilicity, fat-soluble vitamins are solubilised and transported by intracellular carrier proteins to exert their actions. Alpha-tocopherol, the main form of vitamin E found in the body, is transported by alpha-tocopherol transfer protein (TTPA) in hepatic cells (Kono & Arai 2015, Schmolz et al. 2016).

**Literature references**


**Editions**

<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
<th>Author/Editor</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-06-27</td>
<td>Authored, Edited</td>
<td>Jassal, B.</td>
</tr>
<tr>
<td>2016-07-15</td>
<td>Reviewed</td>
<td>D'Eustachio, P.</td>
</tr>
</tbody>
</table>
Alpha-tocopherol (alpha-TOH) belongs to the fat-soluble vitamin E family and is the major form used by humans as an important antioxidant of plasma lipoproteins and cell membranes. It is secreted from the liver into the blood stream but as it is a lipophilic compound, it requires intracellular binding proteins to bind and transport it to exert its actions. One such protein is alpha-tocopherol transfer protein (TTPA, TPP1), a cytosolic protein highly expressed in liver and placenta (Arita et al. 1995, Kostner et al. 1995). The main function of TTPA is to maintain normal alpha-TOH concentrations in the plasma and extrahepatic tissues by binding to, and facilitating the transport of, alpha-TOH from lysosomes to the plasma membrane (Qian et al. 2005; reviews Kono & Arai 2015, Schmolz et al. 2016).

Literature references


Editions

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-05-26</td>
<td>Authored, Edited</td>
<td>Jassal, B.</td>
</tr>
<tr>
<td>2016-07-15</td>
<td>Reviewed</td>
<td>D'Eustachio, P.</td>
</tr>
</tbody>
</table>

https://reactome.org
TTPA transports alpha-TOH from lysosomal membrane to plasma membrane

Location: Vitamin E

Stable identifier: R-HSA-8874705

Type: transition

Compartments: cytosol, lysosomal membrane, plasma membrane

Alpha-tocopherol (alpha-TOH) belongs to the fat-soluble vitamin E family and is the major form used by humans as an important antioxidant of plasma lipoproteins and cell membranes. It is secreted from the liver into the blood stream but as it is a lipophilic compound, it requires intracellular binding proteins to bind and transport it to exert its actions. One such protein is alpha-tocopherol transfer protein (TTPA, TPP1), a cytosolic protein highly expressed in liver and placenta (Arita et al. 1995, Kostner et al. 1995).

The main function of TTPA is to maintain normal alpha-TOH concentrations in the plasma and extrahepatic tissues by binding to, and facilitating the transport of, alpha-TOH from lysosomes to the plasma membrane followed by the continuous export of alpha-TOH from the liver to the plasma (Traber et al. 1994, Qian et al. 2005; reviews Kono & Arai 2015, Schmolz et al. 2016).

Literature references


Editions

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Author</th>
<th>Reviewer</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-05-26</td>
<td>Authored, Edited</td>
<td>Jassal, B.</td>
<td></td>
</tr>
<tr>
<td>2016-07-15</td>
<td>Reviewed</td>
<td>D'Eustachio, P.</td>
<td></td>
</tr>
</tbody>
</table>
# Table of Contents

- Introduction
- Vitamin E
  - TTPA binds alpha-TOH
  - TTPA transports alpha-TOH from lysosomal membrane to plasma membrane

Table of Contents