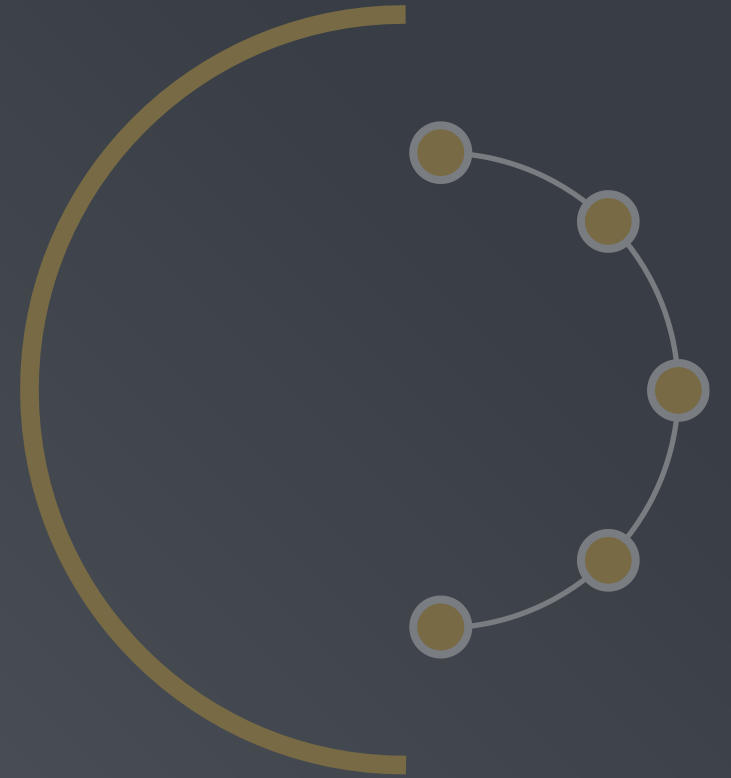


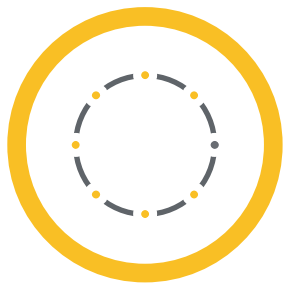


CARBOHYDE  
SUGAR IS LIFE



# Cyclodextrins

*for Cholesterol Complexation*



# Are You Studying Cholesterol-Cyclodextrin Interaction?

We created a kit, featuring carefully selected cyclodextrins for cholesterol encapsulation, adaptable across various application fields.

## Our kit contains:

6 different methylated single isomer beta-cyclodextrins

Randomly methylated beta-cyclodextrin

(2-hydroxypropyl)-beta-cyclodextrin

This information deck is dedicated to demonstrating the power of CDs as cholesterol-encapsulating agents with the following topics:

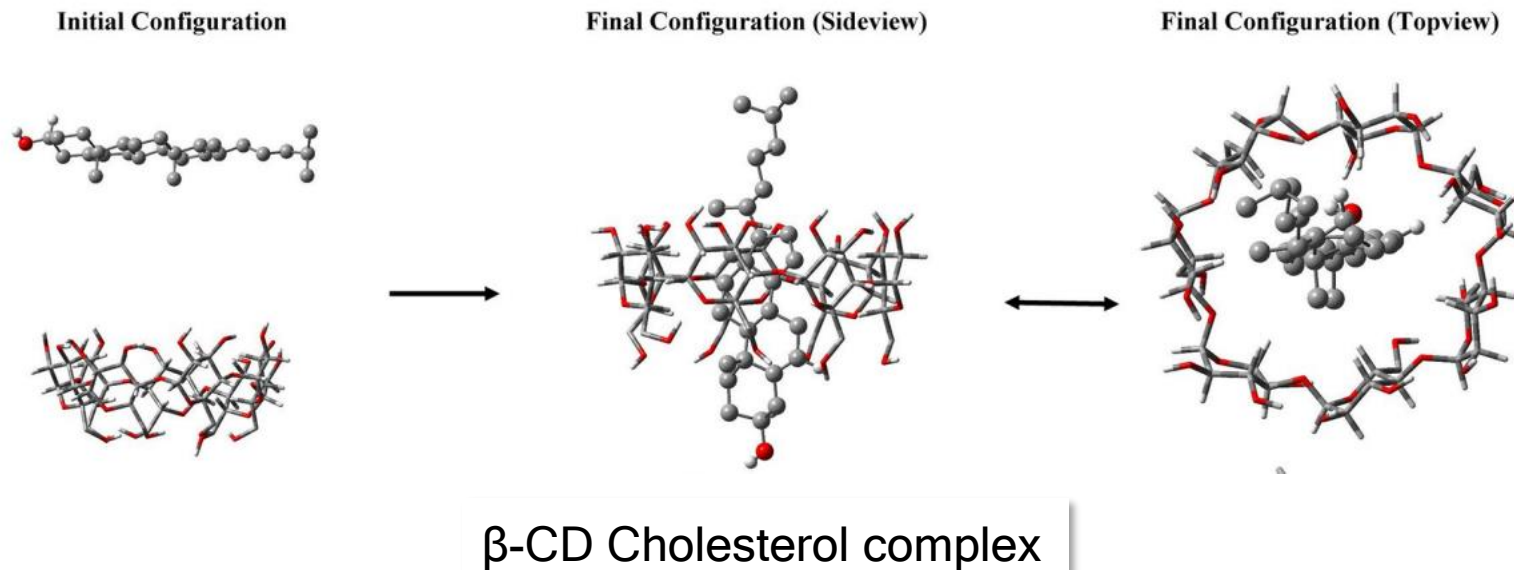
1. CDs as APIs
2. CDs in biotechnology
3. CDs in the food industry

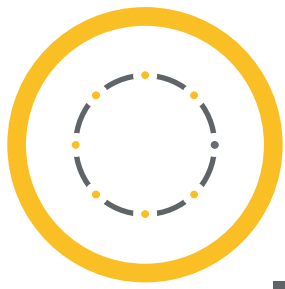


# Cyclodextrins as a Cholesterol Scavenger

## Mechanism

- CDs can form inclusion complexes with cholesterol, in which the cholesterol molecule is trapped inside the CD cavity.
- This complexation results in **enhancing the solubility** of cholesterol.
- Water soluble cholesterol-CD complexes are on the market.

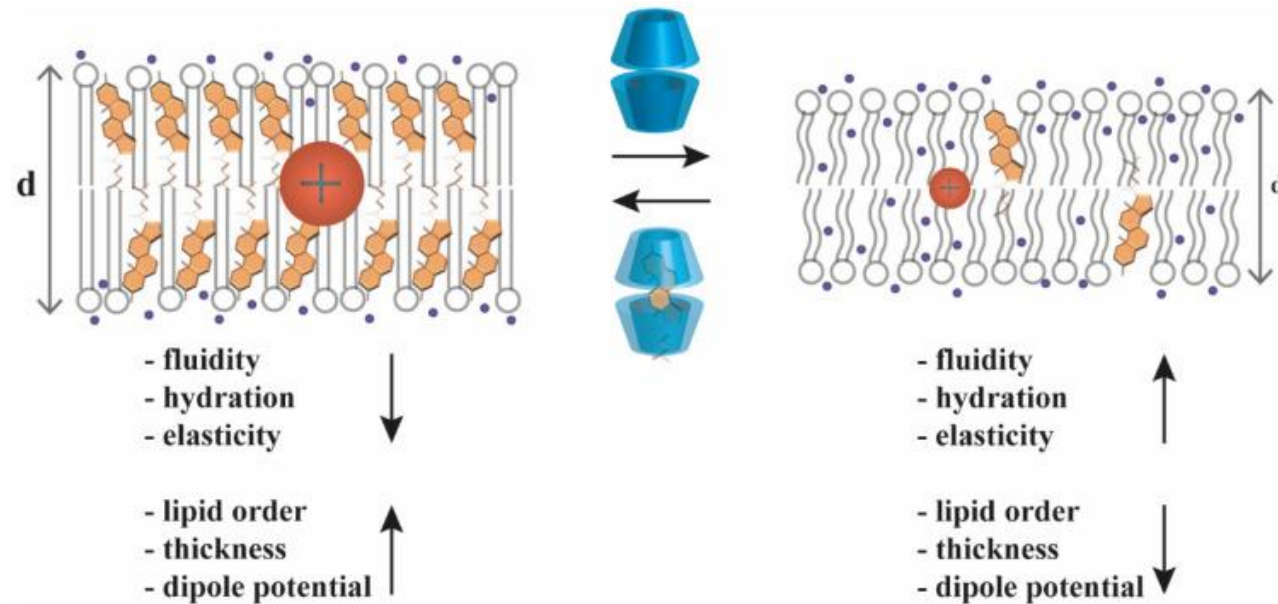




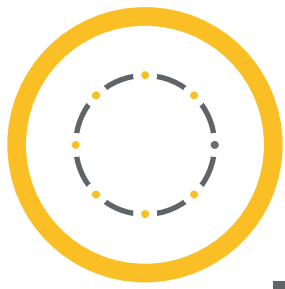
# Cyclodextrins as a Cholesterol Scavenger

## Mechanism

- Complexation can facilitate cholesterol removal from the body, cell membrane and different products.
- CDs can change the cholesterol-dependent cell membrane biophysical parameters



CD effects on biophysical parameters of biological membranes.



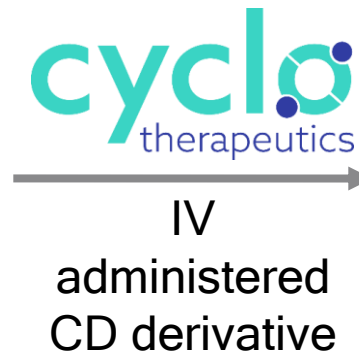
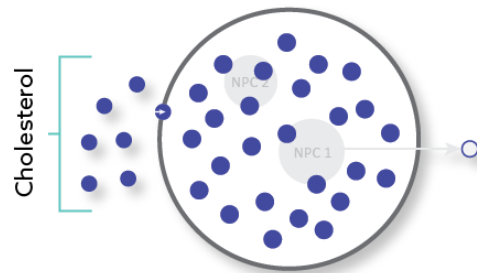
# Diseases Related to Cholesterol Accumulation

## Cyclodextrins as API

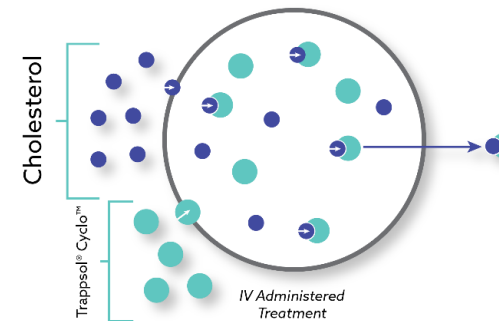
### Niemann-Pick Disease Type C

A rare, fatal and progressive genetic disorder characterized by a defect in the NPC1 protein causing cholesterol and lipids to accumulate in cells of major organs leading to cell and tissue dysfunction.

Non-Functioning Lysosome



Trappsol® Cyclo™



<https://cyclotherapeutics.com/niemann-pick-disease-type-c/>

## Other Cholesterol related diseases studied with CDs

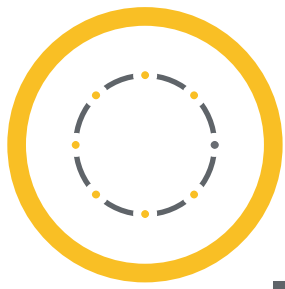
Alzheimer's  
(Cyclo Tx)

Parkinson's  
(Organo Tx)

familial hyper-  
cholesterolemia  
(Beren Tx)

as poison/venom  
antidotes  
(Sydney University)

focal segmental  
glomerulosclerosis  
(ZyVersa Tx)



# Cyclodextrin in Artificial Fertilization

## Cyclodextrins in biotechnology

- Sperm membrane cholesterol influences cryodamage during **cryopreservation**.
- Improvement of the quality of semen by cholesterol supplementation with cholesterol loaded Methyl-BCD.
- Enhancement of capacitation and fertility rate by preincubation of thawed sperms with Methyl-BCD.



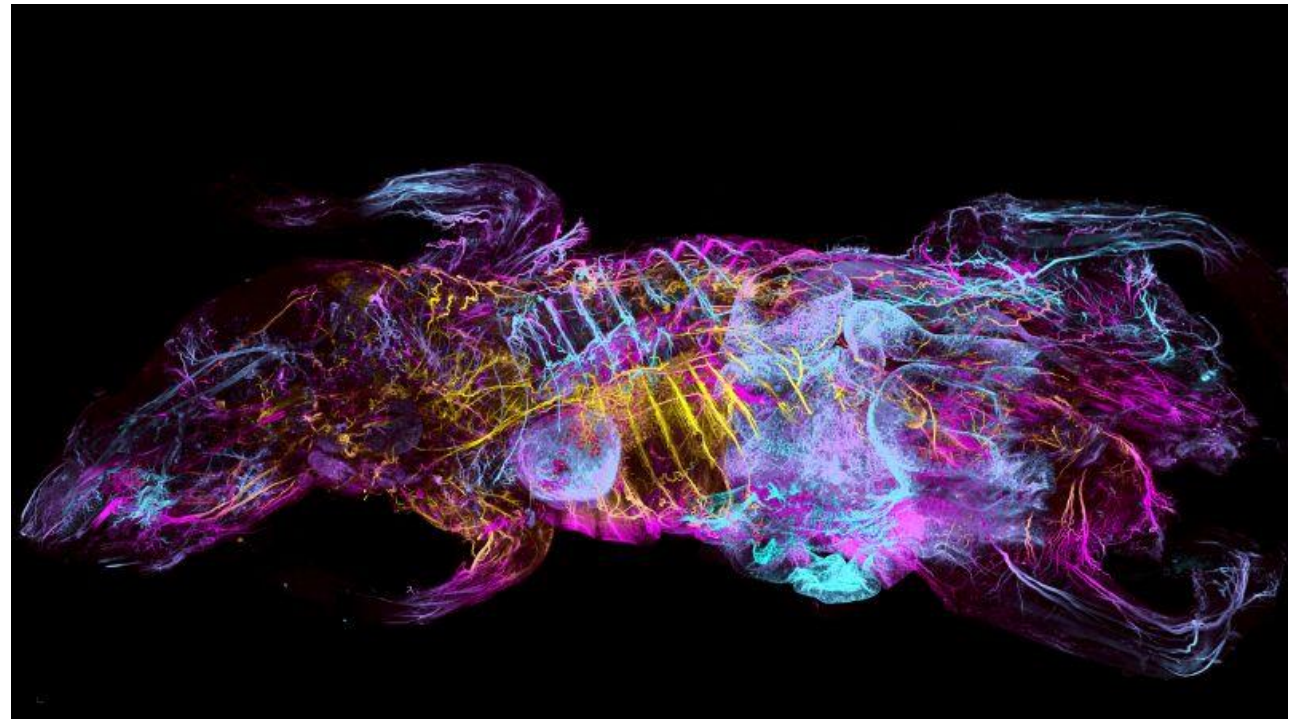




# Full Body Maps: Imaging

## Cyclodextrins in biotechnology

- 2,6-di-O-methyl-BCD enables the uniform staining of whole bodies with conventional IgG antibodies
- reveals cellular and structural maps across the entire mouse body
- facilitates the visualization of endogenous proteins
- compatibility with over 30 commercial antibodies





# Cholesterol-Free Butter and Cream

## Cyclodextrins in food industry

- CDs selectively remove cholesterol, while the content of other nutritional and flavor components is not significantly affected.
- The efficiency of cholesterol removal by  $\beta$ -CD in milk and dairy products can reach up to 98%.



Example of cholesterol immobilization:  
Marketed low cholesterol dairy products

*Balade® products (Butter and Cream) by Corman Co.*

*Kolarič L, et al. Molecules. 2022 May 3;27(9):2919*





# Cholesterol-Free Eggs

## Cyclodextrins in food industry

### Cholesterol-removal process from eggs

- **Step 1** yolks and whites are separated
- **Step 2** beta-CD is mixed with the yolks and then products are removed, along with the crystalline cholesterol-BCD complex by centrifugal force
- **Step 3** yolks and whites rejoined
- **Step 4** the mixture is pasteurized



Example of cholesterol immobilization:  
Marketed low-cholesterol egg products

# Our Kit

Achieve unparalleled cholesterol encapsulation efficiency with our advanced cyclodextrin kit, perfect for applications ranging from pharmaceutical applications to food processing and beyond.

## Our kit contains:

6 different methylated single isomer beta-cyclodextrins  
each 100 mg

Randomly methylated beta-cyclodextrin  
100 mg

(2-hydroxypropyl)-beta-cyclodextrin  
100 mg

1350 EUR

Non-biological use  
(non-dialyzed)

2800 EUR

For biological use  
(dialyzed)

For any questions:  
*[info@carbohyde.com](mailto:info@carbohyde.com)*