

CYCLOLAB



The Cyclodextrin Company



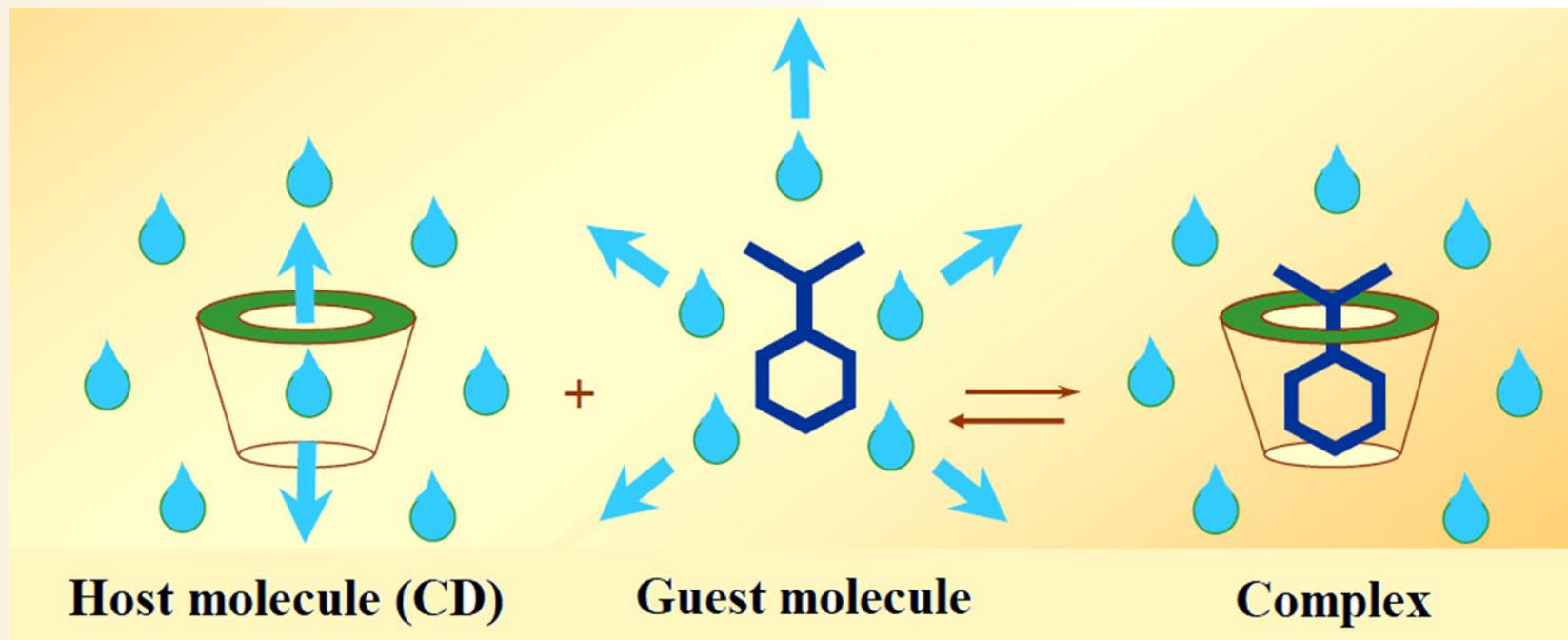
Cyclodextrins in Food and Nutrition

**CycloLab Ltd.
Budapest, Hungary**



What are cyclodextrins (CDs)?

- **Composed of sugars**
- **Cyclic molecules**
- **Naturally occurring compounds**
- **Used in food, pharmaceuticals, drug delivery, chemical industries, agriculture, etc.**





Between 1975-2000 CDs have been used as encapsulation agents/additives:

- for ***stabilization*** of flavours, colorants etc.
- for ***solubilization*** purposes (beverages)
- for ***controlled-release*** of food additives
- for improving food properties (against hygroscopicity, improving powder properties, etc.)

Since 2000 more emphasis is put on use of „empty” non-complexed CDs as:

- tastes and odor masking agents
- dietary fibers, affecting human microflora
- human lipid status altering agents
- glycemic response affecting agents



Solubilizing in Foods

- **CD-complexation improves solubility of lipophiles**

Example: Prevention of precipitation, aggregation in canned juices, Citrus beverages, (hesperidin, naringin etc.)

Food lipids: fats, sterols, carotenes

	Food Approval		
	US	EU	Japan
α-CD	GRAS	Novel food ingredient	YES
β-CD	GRAS	Food Additive E-459*	YES
γ-CD	GRAS	Novel food ingredient	YES



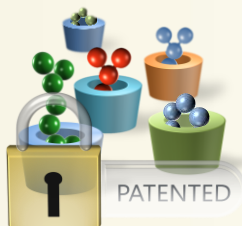
***ADI (acceptable daily intake) of 5 mg/kg/day**

Around 40 products marketed in Japan and Korea

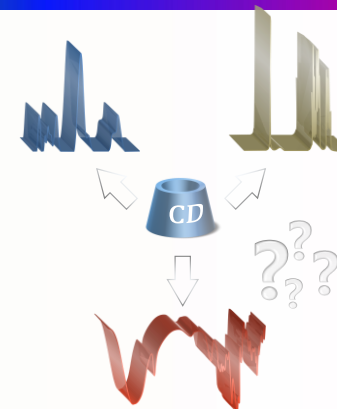
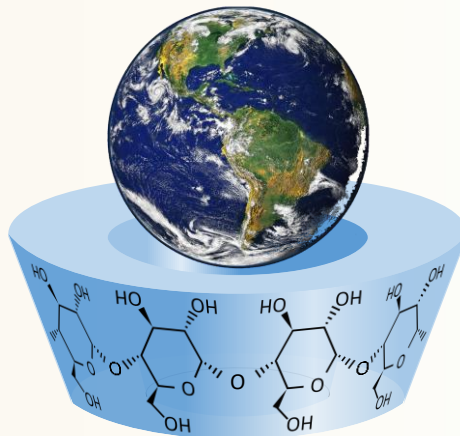
What is CycloLab?



Early phase product development



IP services & consultancy



Analytical services



GMP synthesis and production

Cyclodextrins to control body mass by affecting fat absorption



Supplement Facts	
Serving Size 2 Tablets	
Servings per container 90	
Amount Per Serving	
	% Daily Value
FBCx Alpha-cyclodextrin 2000 mg	
**Daily Value Not Established.	
PRIMARY INGREDIENT:	
FBCx™ IS A NATURALLY SOURCED SOLUBLE DIETARY FIBER FROM CORN. EACH SERVING BINDS UP TO 18 GRAMS (162 CALORIES) OF DIETARY FAT.	

Calorease™ is a dietary supplement containing α CD/FBCx. FBCx is a patented, naturally sourced *dietary plant fiber with a fat-binding capacity*. It has the ability to bind up to 9 times its own weight of dietary fat, passing the fat out of the body.



A New-Zealand honey formulation prepared with alpha CD (Food Supplement product)



- Increased antimicrobial potency
- Sustained-release for enhanced delivery in the body
- *Lowers the Glycaemic Index, suitable for pre-diabetics and people with reduced insulin sensitivity*
- Has a *pre-biotic effect in the lower gut*



Plant Fats derived Milk powders Supplementeted with CDs (Real Food Inc.)



Ingredients:

Vegan Coconut Milk Powder, Organic Matcha Green Tea Powder (Ceremonial Grade), Organic Baobab Powder

Vegan Coconut Milk powder contains Coconut Milk, Maltodextrin (from Corn), Tapioca Starch (<1%), Cyclodextrin (dietary fibre <1%)





The Cyclodextrin Company

CD-containing dietary supplement by Vitasome Labs, Inc. CA



Supplement Facts		
Serving size 1 sachet: 0.11 Oz. (3 g) Servings Per Container: 30		
	Amount Per Serving	% DV
Calories	5	-
Vitamin C (as L-Ascorbic- Acid)	250 mg	417%
L-Glutathione (Setria®)	250 mg	▲
Citrus Bioflavonoids	12.5 mg	▲
Phosphatidylcholine	125 mg	▲
Pterostilbene	50 mg	▲
Piperic Acid	1.5 mg	▲

▲ (Daily Value not established).
* (Percent Daily Values are based on a 2,000 calorie diet).

Other Ingredients: Sunflower lecithin, Citric Acid, Cyclodextrin, (Arabic), Natural Flavors, Stevia.

Vitasome Labs, Inc.
Placentia, 92870
California, U.S.A
Support: 888-669-VITA (8482)
Setria® is a registered trademark of KYOWA HAKKO BIO CO., LTD.
Vitasome® is a registered trademark of Vitasome Labs, Inc.
Glutasome® is a registered trademark of Vitasome Labs, Inc.

Claims:

promotes *healthy skin*, helps diminish signs of aging, defends against environmental toxins



The History of Powdered Alcohol

1970s: Japanese company Sato Foods begins selling powdered alcohol as an additive to help preserve meat and fish.

1974: The first American application for a powdered alcohol patent is filed.

2005: German company Subyou introduces powdered alcohol for creating beverages.

2007: Students in the Netherlands invent Booz2Go, a powdered alcohol for creating beverages marketed at young people.

April, 2014: US Company Palcohol (owned by Lipsmark) seeks approval for distribution of powdered alcohol.

April 8, 2014: The Alcohol and Tobacco Trade and Tax Bureau in the US (ATTTB) approved Palcohol packaging labels.

April 18, 2014: ATTTB informs the associated press that approvals were issued in error.

March, 2015: Several US states including: Alaska, Louisiana, South Carolina, Vermont and Virginia, prohibit the distribution of Palcohol.

March 21, 2015: Palcohol confirms that the plan is to bring Palcohol to Australia in the next few months.



***Powdered Alcohol* Approved For Sale In The U.S. in March 2015**
„Powdered alcohol lets you turn water into wine or vodka“

(Mark Phillips, CEO Palcohol)



The Cyclodextrin Company

Low cholesterol egg

Solvent-free cholesterol-removal process:

- yolks and whites are separated,
- beta-CD is mixed with the yolks and then removed, along with the crystalline cholesterol-BCD complex by centrifugal force
- yolks and whites are rejoined,
- the mixture is Pasteurized and packed

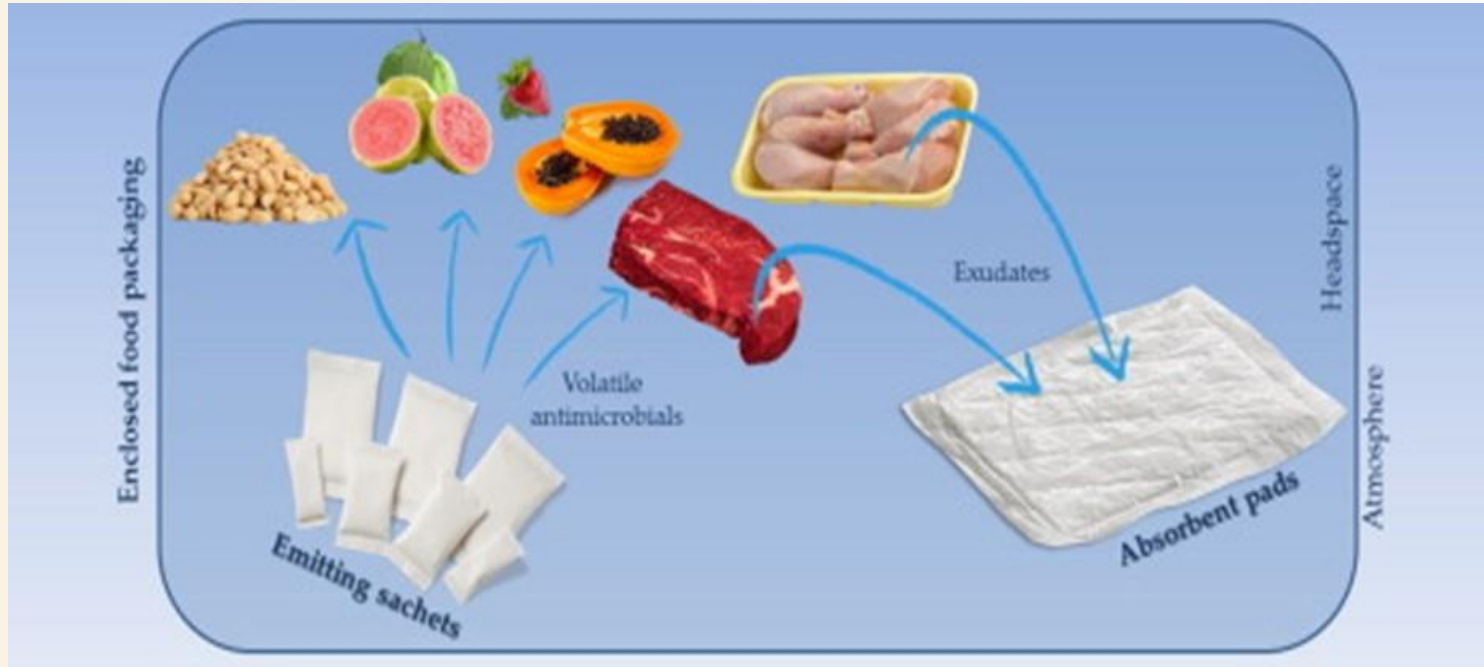


Pioneers of egg cholesterol removal:

- Bayol et al: EP 326469 A1 2 Aug 1989
- Cully, J. et al EP 454099 A1 30 Oct 1991
- Sidhu-Oakenfull: 6th Intl. CD Symp. Chicago (1992)

Michael Foods / Simply
eggs
products

Cyclodextrin-enabled packaging materials: *adsorber and emitter functions*



- Empty CDs in *Adsorbent pads and bags* (collecting, fixing and immobilising odours and to prevent loss of volatiles)
- CD complexed volatiles: in *emitting sachets and bags* to provide released volatile antimicrobials, repellents etc. (moisture-activated!)



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