



CBC (EUROPE) Ltd.
Chemical Division

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- SHOWA ZEIN DP -

DATA SHEET

Zein is a major component of corn proteins, called a prolamine soluble in aqueous ethanol.

Zein is extracted from gluten meal separated under corn starch production. The acquisition of deodorized and decolourised zein is attained by our own method. It is called "SHOWA ZEIN DP".

We supply "SHOWA ZEIN DP" to be used for food processing and other various purposes with confidence because it is a natural protein of corn.

CHARACTERISTICS

Insoluble in water, soluble in aqueous ethanol (60-90% by weight).

ADVANTAGES

FILM	Ethanol solution of zein is sprayed or spread in on materials, then dried. Zein film is formed on them. It is edible and resistant to water, acid and oil.
ADHESIVE	Zein adheres tightly. For example, spread or sprayed Zein solution on timbers, etc. (dry surface) adheres them firmly.
ENTERIC	Zein is highly resistant to gastric acid and is digested by intestinal enzymes.
ANTI-OXYDATION	Zein has great anti-oxidation effect when Zein is in contact with oil.

GENERAL APPLICATIONS

EDIBLE COATING

1. prevention of oxidation of nuts
2. prevention of stickiness of chocolate
3. blocking of odor and taste
4. prevention of tablet from crumbling

ENTERIC FOOD

MIXED FERTILIZER FOR FISH

OTHER YOUR OWN PURPOSE



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SPECIAL APPLICATIONS

COATING

1. For spray coating: 8-10gr of "SHOWA ZEIN DP" is dissolved into 100ml of aqueous ethanol (80-90% by weight). This solution is sprayed on materials and dried. Addition of medium chain glycerol etc. makes coating easy.
2. For pan work-coating: 15-20gr of "SHOWA ZEIN DP" is dissolved into 100ml of aqueous ethanol (85-86% by weight). This solution is spread on materials and dried. Addition of medium chain triglyceride etc. makes coating easy.

ADHESIVE

1. 10-25gr of "SHOWA ZEIN DP" is dissolved into 10ml of aqueous ethanol (60-90% by weight). This solution is spread or sprayed on the surface you want to adhere. Addition of plasticizer improves adhesion.
2. "SHOWA ZEIN DP" is mixed into powder material and aqueous ethanol (60-90% by weight) is added to this mixed powder. The mixture is kneaded and dried. Addition of plasticizer improves adhesion.

HOW TO DISSOLVE

"SHOWA ZEIN DP" should be added bit by bit into aqueous ethanol stirring vehemently. When a part of "SHOWA ZEIN DP" form a small clod, it should be stirred for 1 hour. White precipitate may still appear in this solution after a few days. It would not avoid forming Zein membrane but you may get rid of it filtering, etc. as you want.

TYPICAL CHEMICAL ANALYSIS

FORMULATION	%
Moisture	3% (130°C, 1hr)
Protein	95% (Nx6,25)
Fats and Oils	1%



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ZEIN COATING

1. SPRAY COATING

Formulation of Coating Solution

FORMULATION	% BY WEIGHT
Showa Zein DP	8 – 15
Ethanol	85 – 86
Water	14 – 15
Plasticizer	0.8 - 2

Zein is dissolve in aqueous ethanol (86% by weight) about 20%. Stirr for 1hr and reduce it with same aqueous ethanol to the concentration from 8 to 15%.

2. PANWORK COATING

FORMULATION	% BY WEIGHT
Showa Zein DP	8 – 15
Ethanol	85 – 86
Water	14 – 15
Plasticizer	0.8 - 2

3. PLASTICIZER

MCT (Medium Chain Triglycerides) help to protect tablet from gathering together during coating and give resistance to water.

Free fatty acids (oleic acid etc.) give softness and transparency to the film.

Glycerol gives adhesiveness to surface of wax and solid fat.

4. SPRAY COATING CONDITION

Apparatus	Hi-Coater HCT-48 Freund Industrial
Rotation Speed	10-20 rpm
Inlet Air Temperature	40-50°C
Spray Speed	40-80g/min



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ZEIN FOR ENTERIC COATING

1. COATING

Placebo tablet: acid-red 52 in lactose (150mg/tablet)

FORMULATION	% BY WEIGHT
Showa Zein DP	8
Ethanol	67,5
Water	24,5
Free fatty acid of soybean	1,2

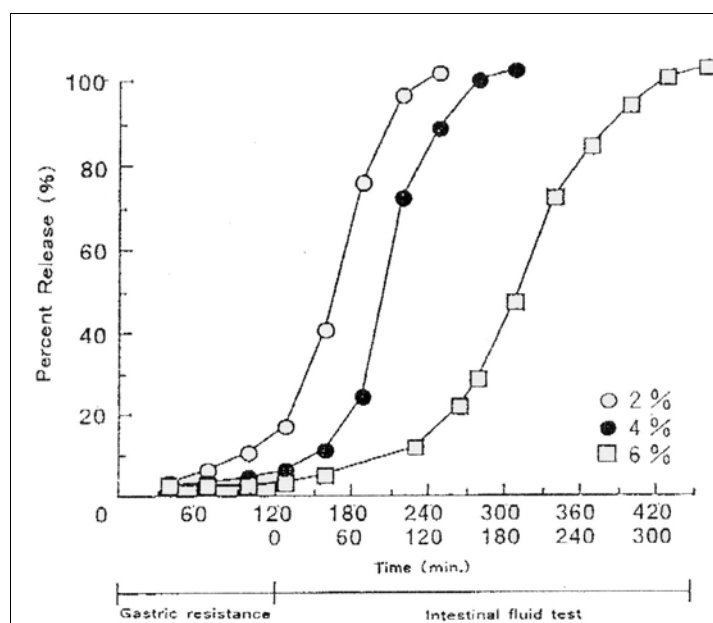
Coating condition

Apparatus	Hi-Coater HCT-48 Freund Industrial
Rotation Speed	10-20 rpm
Inlet Air Temperature	40-50°C
Spray Speed	40-80g/min

2. ENTERIC TEST (According to JP method)

TEST ITEM	pH	TEMPERATURE
Gastric resistance	1,2 (pepsin, 2mg/ml)	36-37°C
Intestinal fluid test	6,8 (chymotrypsin, 0,2 mg/ml)	36-37°C

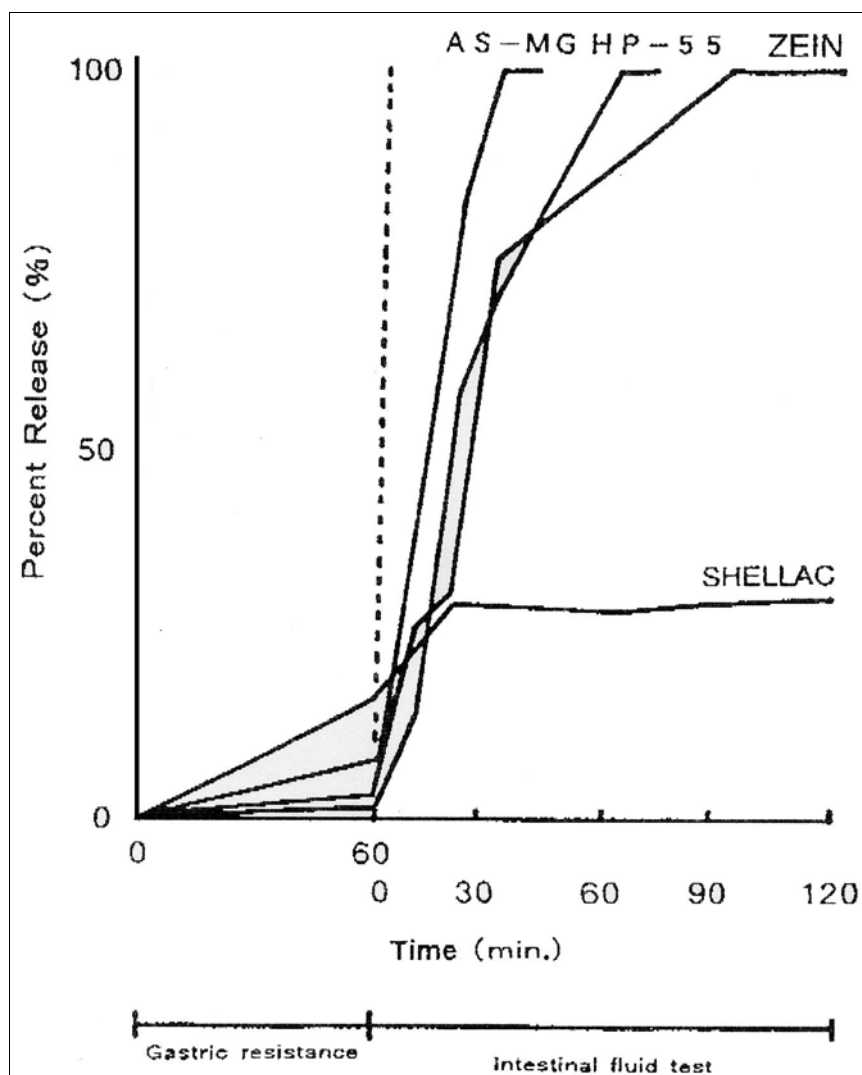
3. TEST RESULT





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Legend:

PRODUCT	COMPANY
ZEIN	Showa Zein DP (Corn Protein)
AS-MG	Shin-Etsu Chemical
HP-55	Shin-Etsu Chemical
SHELLAC	



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ZEIN FOR SLOW RELEASE TABLET AS MATRIX

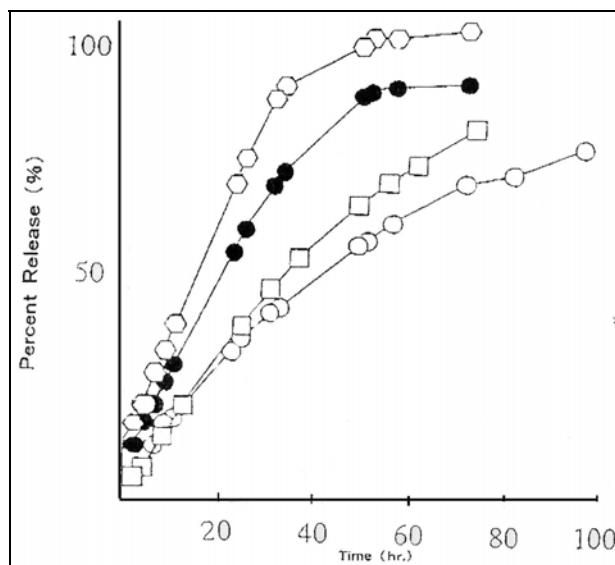
1. PREPARATION (direct tableting)

FORMULATION OF POWDER	%
Aspirin	20
Showa Zein DP	20-80
Lactose	60-0

2. RELEASE TEST (according to JP method)

pH of buffer: 1,2
Enzyme added: pepsin

3. TEST RESULT



Legend:

Content of ZEIN DP in tablets	Symbol
80%	○
60%	□
50%	●
40%	⬡