klucel nutra™ plus
multifunctional tablet binder

optimized binder-disintegrant excipient for nutritional supplements

description

Klucel Nutra™ PLUS multifunctional tablet binder is an economical, one-step excipient for direct compression tableting.

Klucel Nutra™ PLUS binder provides the premium binding ability of Klucel Nutra™ modified cellulose, widely known in the nutraceutical industry for superior performance, with ideal disintegration properties for improved bioavailability.

benefits

Klucel Nutra™ PLUS binder is co-processed with an optimized amount of croscarmellose in a proprietary process to produce an effective, all-in-one binder-disintegrant excipient. Co-processing produces a material with superior performance as compared with a simple dry blend. In addition, co-processing creates excellent powder flowability to ensure consistent performance during commercial scale manufacturing.

Achieving the desired appearance and performance of nutritional supplements, while maximizing processing efficiencies, requires optimization of the tablet binder and disintegrant.

Selection and use of an ideal binder and disintegrant will impact tablet robustness (strength, plasticity, friability), bioavailability

(disintegration and dissolution time, absorption), and the size and dosage level of a tablet. These attributes can significantly influence end-product differentiation in the marketplace.

In addition to product performance, the use of an ideal excipient will also impact processability and cost. Any excipient must be cost effective dosage-wise, but also be easy to handle and facilitate lower processing costs during manufacturing.

Klucel Nutra™ PLUS binder provides convenience and performance to dietary supplement customers.

case study 1

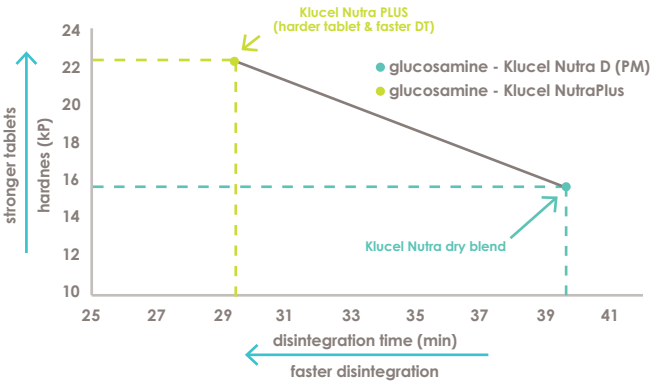
The right balance between tablet robustness and disintegration time*

Klucel Nutra™ PLUS multifunctional tablet binder provides superior tablet hardness with outstanding disintegration time as compared with common dry blends of binder and disintegrant. Slow disintegration time may decrease bioavailability.

formulation number	1		2	
ingredient	**wt %**	**mass (mg)**	**wt %**	**mass (mg)**
Glucosamine granules	93	1116	93	1116
Klucel Nutra™ PLUS binder	6	72	0	0
Klucel Nutra™ D modified cellulose	0	0	4	48
croscarmellose sodium	0	0	2	24
magnesium stearate	0.25	3	0.25	3
stearic acid	0.75	9	0.75	9
total	**100**	**1200**	**100**	**1200**

*Tablets were compressed at 25 kN compression force at 45 RPM on a StylOne Evolution tablet press

Klucel Nutra™ PLUS formulation achieves stronger tablets and faster disintegration time



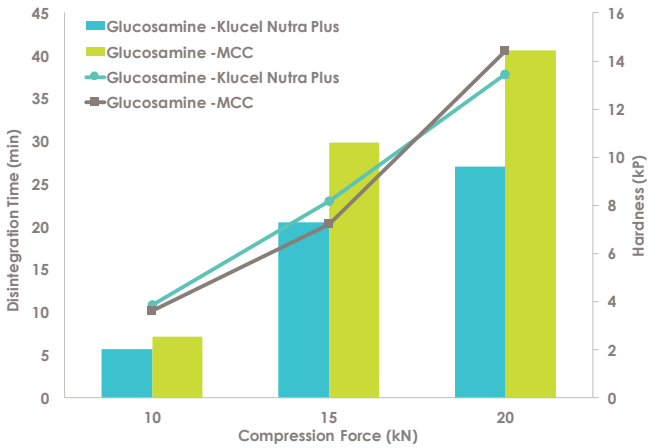
case study 2

Smaller tablets or higher dosage with excellent hardness and faster disintegration

Klucel Nutra™ PLUS multifunctional tablet binder enables lower overall excipient levels than regular binder and disintegrant blends while maintaining desired hardness with improved disintegration.

Smaller tablets may improve patient compliance and increase batch yield to reduce operating cost. In addition, Klucel Nutra™ PLUS can be used to increase dosage for product differentiation.

formulation number	1		2	
ingredient	**wt %**	**mass (mg)**	**wt %**	**mass (mg)**
Glucosamine granules	93	1116	82	1116
Klucel Nutra™ PLUS binder	6	72	0	0
mcrocrystalline cellulose (MCC PH 102)	0	0	15	204.1
croscarmellose sodium	0	0	2	27.2
magnesium stearate	0.25	3	0.25	3.4
stearic acid	0.75	9	0.75	10.2
total	**100**	**1200**	**100**	**1361**



Klucel Nutra™ PLUS binder versus microcrystalline cellulose: smaller tablets with shorter disintegration time and excellent hardness

case study 3

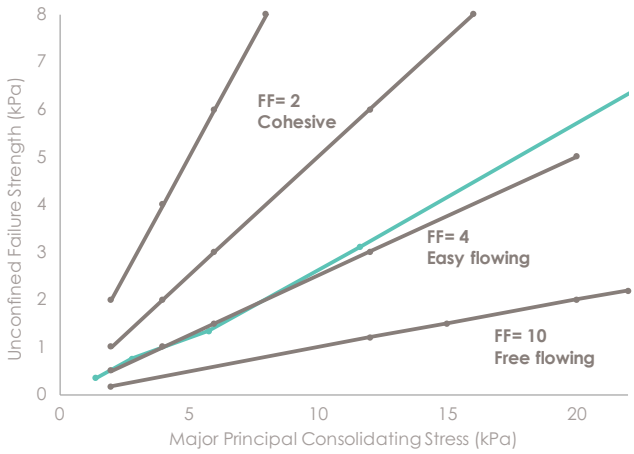
All-in-one binder-disintegrant designed to simplify direct compression tableting and reduce operating cost

Klucel Nutra™ PLUS multifunctional tablet binder enables one-step excipient addition and provides excellent powder flowability with significantly lower dusting. These properties facilitate low variability during direct compression, producing tablets with consistent tablet strength and low tablet weight variability, thereby reducing defects and improving yield.

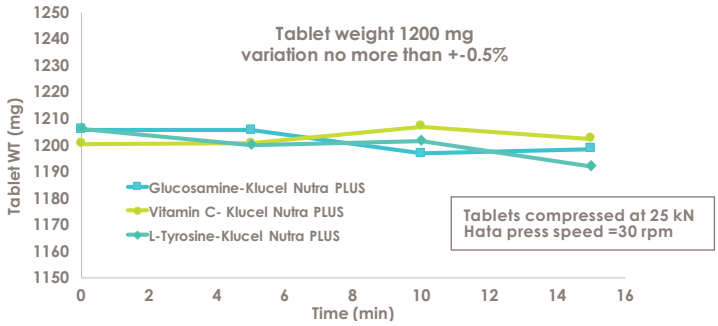
ingredient	wt %	mass (mg)
Glucosamine granules	93	1116
Klucel Nutra™ PLUS binder	6	72
magnesium stearate	0.25	3
stearic acid	0.75	9
total	**100**	**1200**

ingredient	wt %	mass (mg)
vitamin C or l-tyrosine	93	1116
Klucel Nutra™ PLUS binder	6	72
magnesium stearate	0.25	3
stearic acid	0.75	9
total	**100**	**1200**

Klucel Nutra™ PLUS has excellent powder flowability

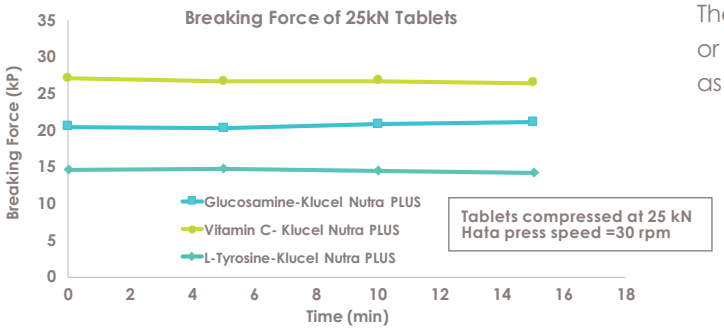


Klucel Nutra™ PLUS produces tablets with low weight variability



robust performance during commercial scale manufacturing

Klucel Nutra™ PLUS produces tablets with consistent strength



robust performance during commercial scale manufacturing

Klucel Nutra PLUS multifunctional tablet binder is optimized to simplify and improve formulation development and production of nutritional supplement tablets.

Our studies show that Klucel Nutra PLUS binder achieves best-in-class tablet binding and superior disintegration. These attributes offer opportunities to achieve smaller tablets or higher dosages with excellent hardness and disintegration as well as to reduce complexity and operating cost.

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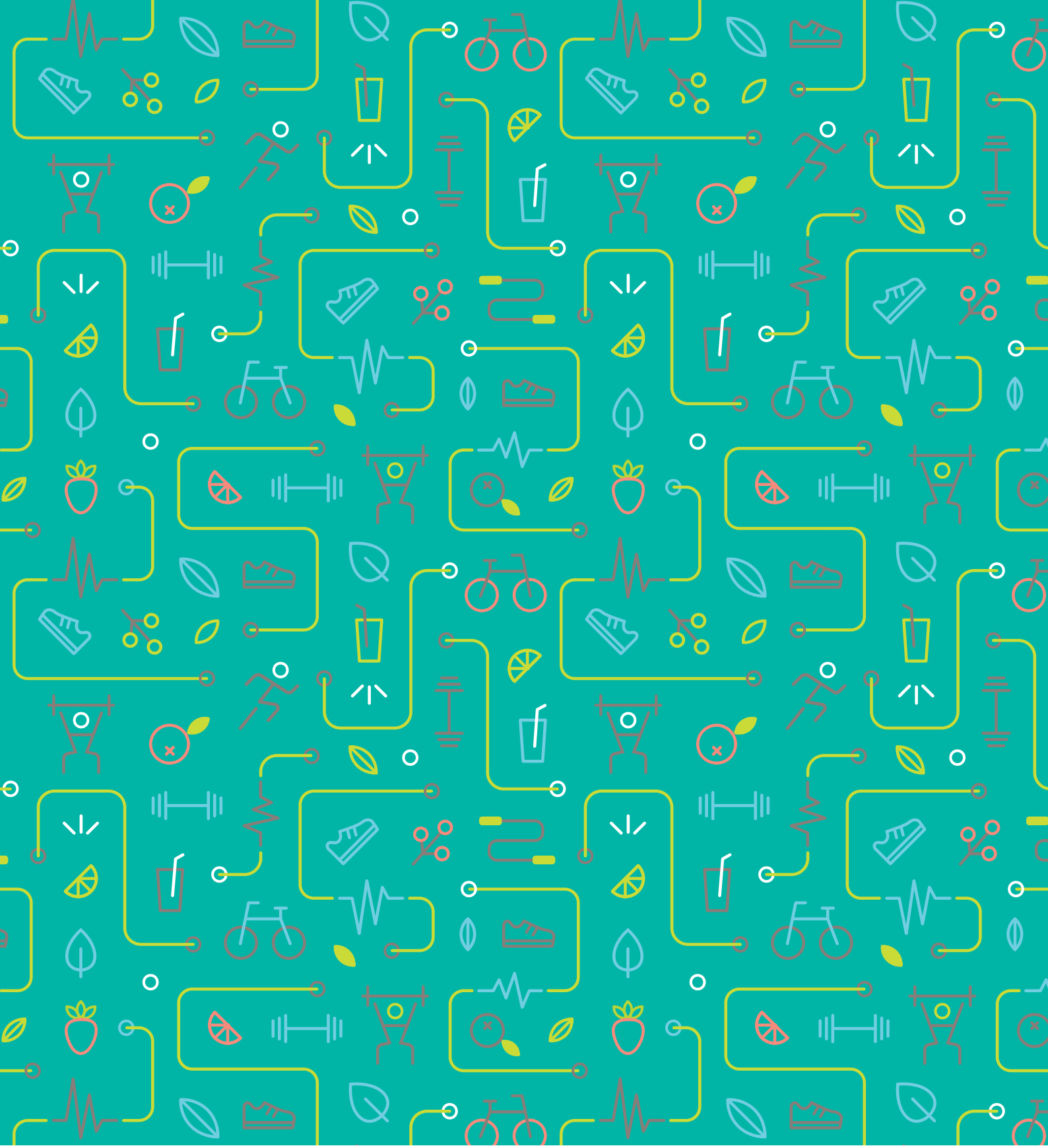

regional centers

North America —
Kearny, NJ USA
Tel: +1 800 526 0609
+1 201 246 2000

Europe — Poland
Tel: +8 22 607 25 33

Europe — Spain
Tel: +34 932 064 195

India — Maharashtra
Tel: +91 22 61489696

Asia Pacific — Singapore
Tel: +65 6775 5366

Middle East, Africa —
Istanbul, Turkey
Tel: +90 216 538 08 00

Latin America — Mexico
Tel: +52 55 52 76 6121

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