



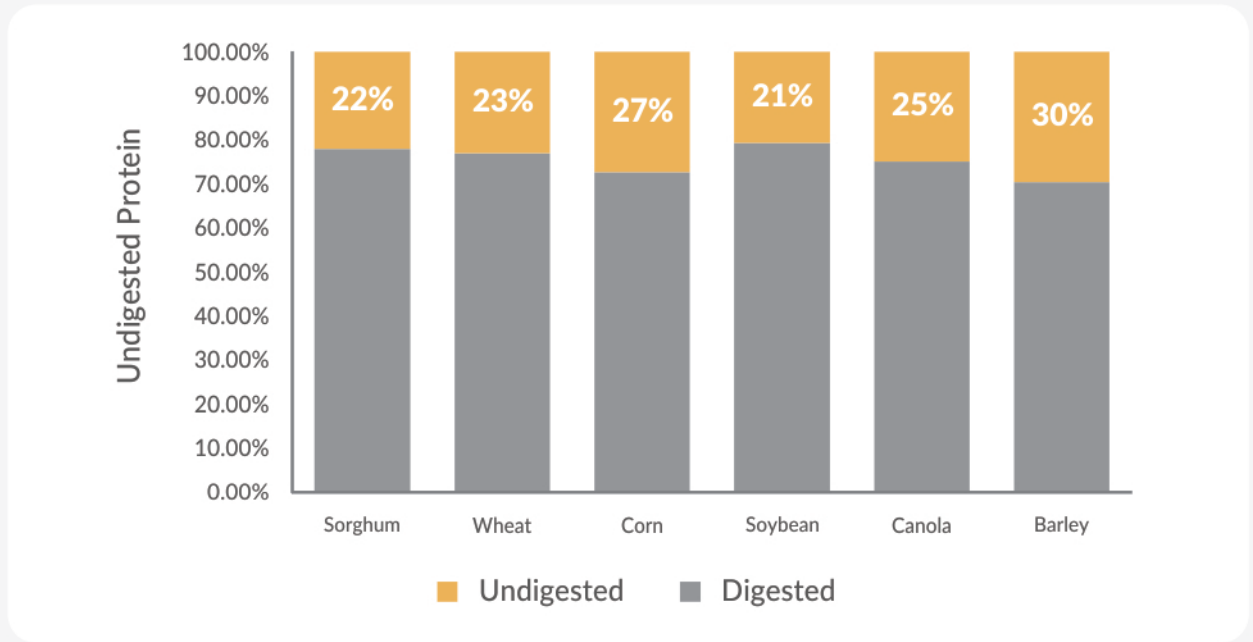
NUTRIKEM™ XL- Pro

Makes to Gain More

KEMIN®

Understanding the nutritional potential of diverse feed ingredients is crucial to improve bird performance and optimize feed cost. Efficient utilization of proteins, carbohydrates and fats present in feed raw materials is key for sustainable poultry production.

Undigested Protein Fraction in Different Ingredients



Source: World's Poultry Science Journal, Vol. 69, December 2013

More than 20% of the total protein remain undigested and excreted by poultry bird.

Non Starch Polysaccharides Content of Raw Material

Raw Material	Arabinoxylans	Beta Glucans	Mannan	Cellulose	Oligosaccharides	Others	Total NSP
Corn	4.3	0.3	0.3	2	0.8	0.6	8.3
Wheat	7.1	0.6	0.3	1.8	0.1	0.1	10
Sorghum	3.7	0.1	0.1	1.1	0.2	0.3	5.5
Soybean Meal	0.4	0.7	1.3	9.1	9.6	4.6	25.7
Canola meal	0.3	0.8	0.5	7.1	3.7	5.6	18
Corn DDGS	11.7	-	0.5	2.7	0.2	10.2	25.3

Source: Feedstuffs, January 24, 2014 & Springer Handbook of Marine Biotechnology

Poultry birds do not produce enzymes for digesting NSP in feed raw materials. Antinutritional factors (ANF) in NSP cage nutrients & increase the viscosity of digestive tract.

NUTRIKEM™ XL Pro : Comprehensive Solution

CARBOHYDRASES

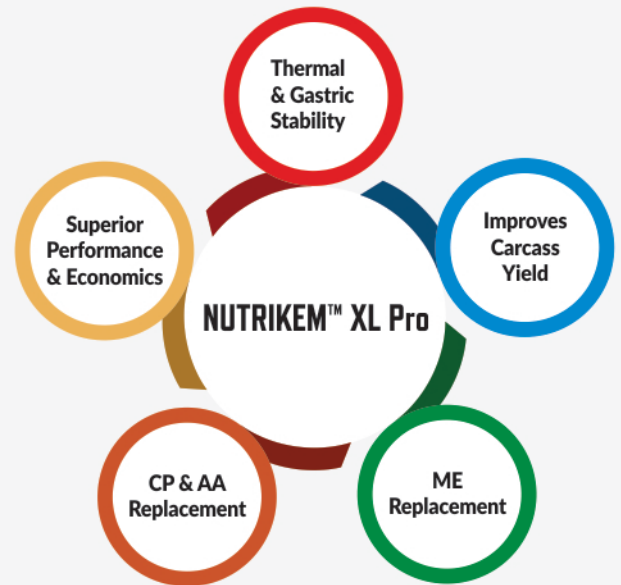
- Better NSP Breakdown
- Enhance Starch Utilization
- Higher Energy Release

MULTI PROTEASES

- Ingredient Compatibility
- Gastric Activity with Sustained Release
- Delivers on Multiple diets

LYSOPHOSPHOLIPIDS

- Enhance Lipid Nutrition
- Improves Nutrient Absorption
- Beyond Emulsification



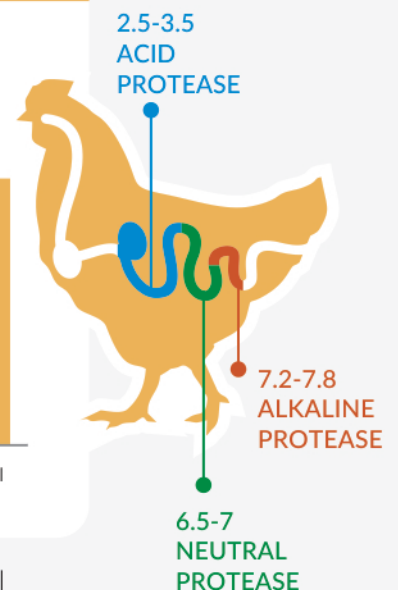
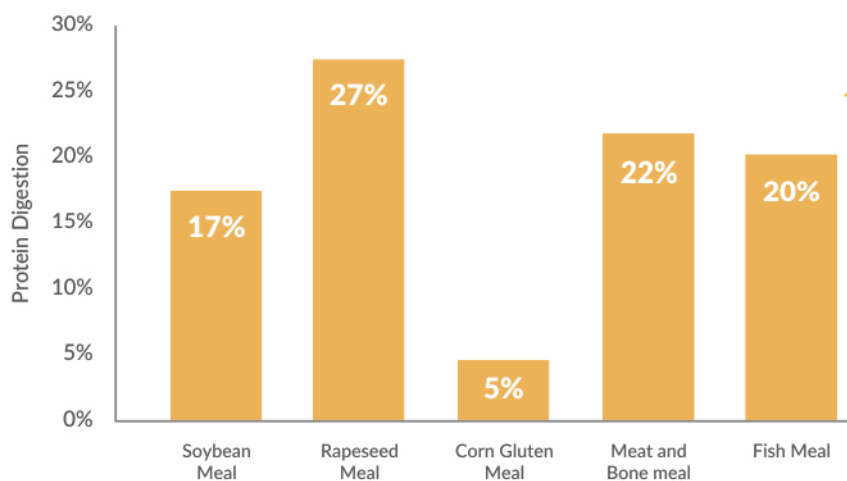
NUTRIKEM™ XL Pro - Cutting the clutter

KEMIN'S MULTI PROTEASE TECHNOLOGY



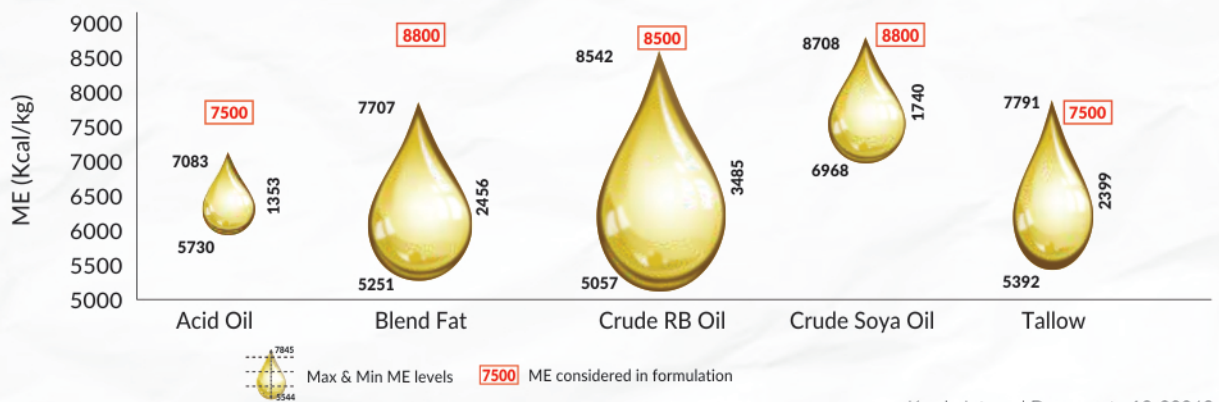
NUTRIKEM™ XL Pro contains patented acid, alkaline and neutral protease which gets activated according to pH condition of gastrointestinal tract

Protein Digestibility Improvement



Protease in **NUTRIKEM™ XL Pro** is effective on vegetable and animal protein sources

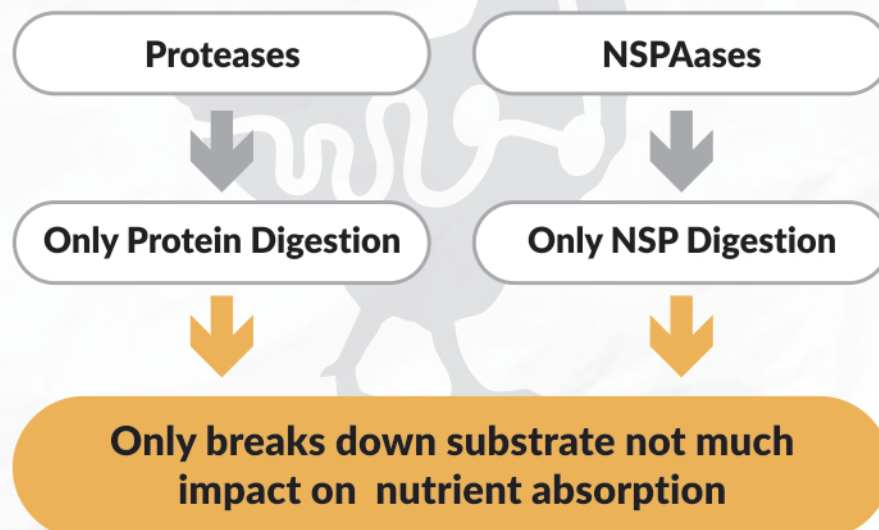
Fat utilization & Energy variation



Young birds do not produce enough bile salt due to poor organ development this leads to more fat excretion in litter. Fat digestion efficiency also vary due to variable oil & fat quality. Kemin studies indicate a variation range from 15-26% for oil samples used in poultry feed

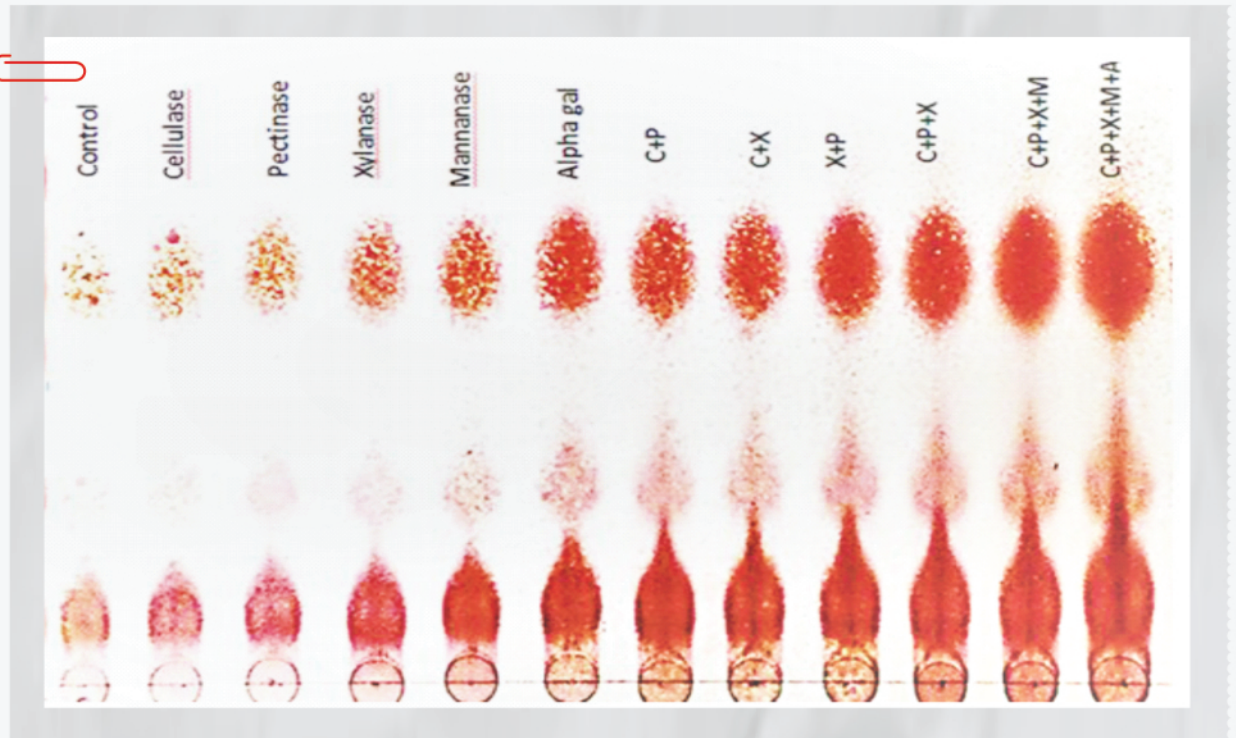
Current limitation of Single enzymes

- Feed nutrient matrix cannot be released by single enzyme due to cage matrix structure
- Single enzyme will not utilize the available substrates efficiently and leaves nutrients unutilized
- Unabsorbed end product may get wasted as well may act as a nutrient for harmful microbes in large intestine



Multiple NSP Enzymes for Sugar release

Thin-layer chromatography studies shows combination of different NSP enzymes releases more sugar than single enzyme



(Kemin internal data- 15-00025)

NUTRIKEM™ XL Pro contains multiple enzymes for better sugar release

Lysophospholipids for Fat Digestion



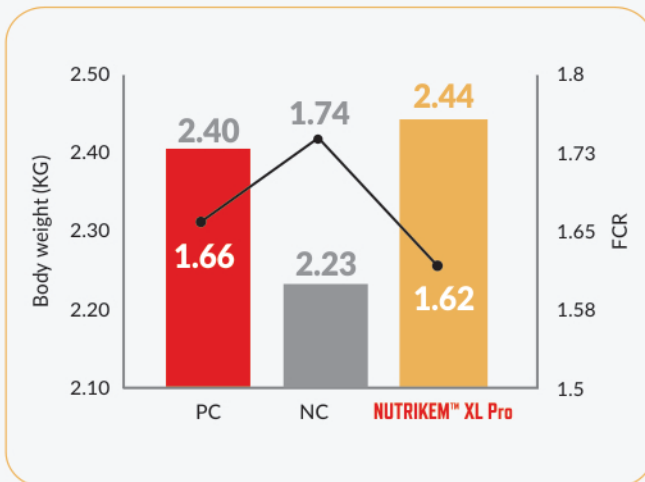
Lysophospholipids in **NUTRIKEM™ XL Pro** boost overall fat metabolism

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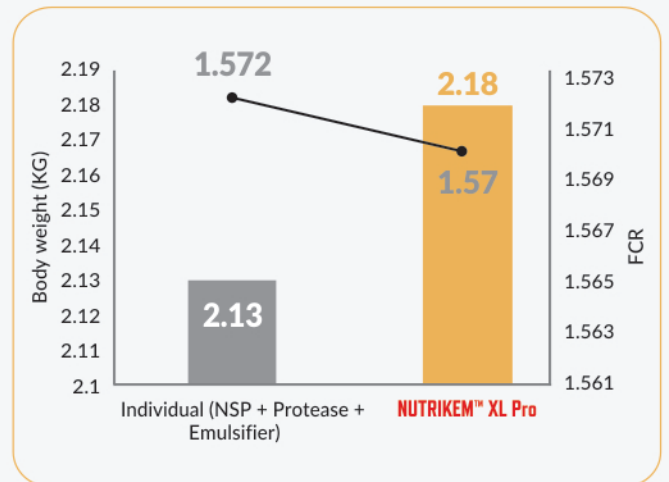
Broiler Performance

Substitution of **NUTRIKEM™ XL Pro** for 5% digestible acids and 100 Kcal ME resulted in savings in feed cost as well enhances the animal performance over regular diet

NUTRIKEM™ XL Pro compared with **individual enzymes and emulsifier** by Reformulation of 0.8% crude protein and 80 kcal energy



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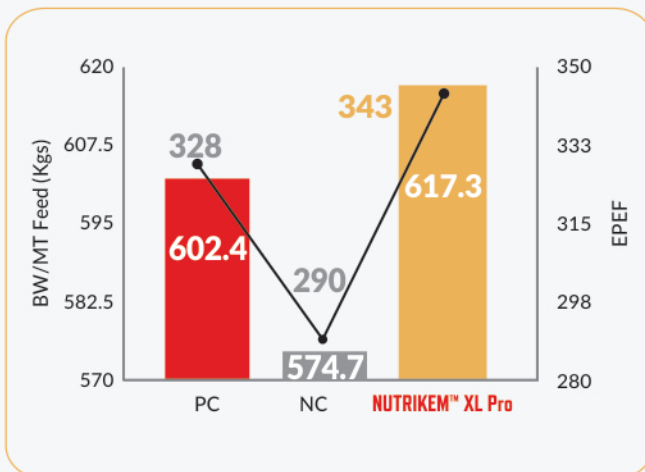


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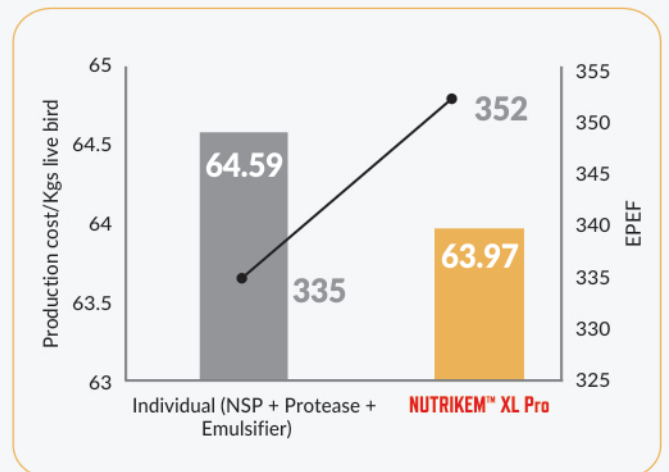
Production Efficiency

NUTRIKEM™ XL Pro improves the production efficiency by 15kg additional live wight per tonne of feed & EPEF over regular diet in 5% dig. amino acids & 100Kcal ME energy substituted diet

NUTRIKEM™ XL Pro saves Rs.620 for 1000kg live bird weight when compared to **individual enzymes and emulsifier** reformulated with 0.8% crude protein & 80 Kcal energy



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Kemin internal data 19-21528

APPLICATION

NUTRIKEM™ XL Pro recommended through reformulation with diet specific matrix values at 500gm per tonne of feed. **NUTRIKEM™ XL Pro** can substitute 100-125 Kcal ME per kg feed & 3-5% digestible aminoacids.

KEMIN

Kemin Industries South Asia Pvt. Ltd.
 #C-3, 1st Street, Ambattur Industrial Estate,
 Chennai-600 058, Tamil Nadu, India,
 Tel: 044 42202800,
 Email: mail.india@kemin.com
 Web: www.kemin.com

FAMI Qs
 European Feed Additives and Premixtures Quality System

