"Additional inclusion of good probiotic provides extra values in digestion and gut health of animals"

UP:Lite PROMAX

Description	Feed additive NSP enzymes with probiotics
Main ingredients	Xylanase, Mannanase, *Bacillus subtilis*
Application	To improve feed utilization To reduce feed cost To improve digestibility and gut health
Application animal	Poultry, Cattle
Dosage	Poultry: 500g/MT of feed Ruminant: 1kg/MT of feed
Package	20kg bag
Storage and shelf life	Store in cool and dry place 24 months from manufactured date

TURMS INTERNATIONAL

TURMS INTERNATIONAL INC.
A2-50, 550, Misa-daero, Hanam-si,
Gyeonggi-do, Republic of Korea
T: +82-70-8633-2259
E: caleb@turmsinternational.com

UP VALUE!
LITE COST!

UP:Lite PROMAX

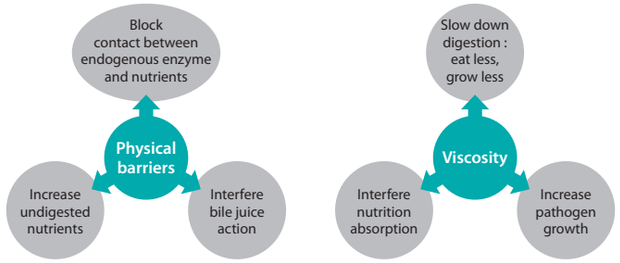
Noble NSP enzymes with probiotics combination for feed

UP VALUE!
LITE COST!

"Up:Lite was born of 30 years of researches and market experiences in global feed enzyme industry"

What is NSP(Non starch polysaccharide)?

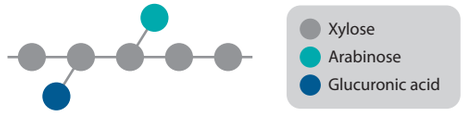
- Complex form of carbohydrates which cannot be digested by the animals.
- 2 major anti-nutritional effects in feed.
  - Increase viscosity
  - Act as physical barriers of digestion



Major NSPs in feed stuffs

Xylan

- Polymer with β-1,4-linked xylose.
- Arabinoxylan, Glucuronoxylan and Glucuronoarabinoxylan.
- Rich in quantity: act as major physical barrier of digestion.



Structure of Glucuronoarabinoxylan

Mannan

- Polymer with β-1,4-linked mannose.
- Galactomannan, Glucomannan and Galactoglucomannan.
- Major source which increases feed viscosity, because of its high solubility.
- Waste nutrition by inducing unnecessary immune responses.

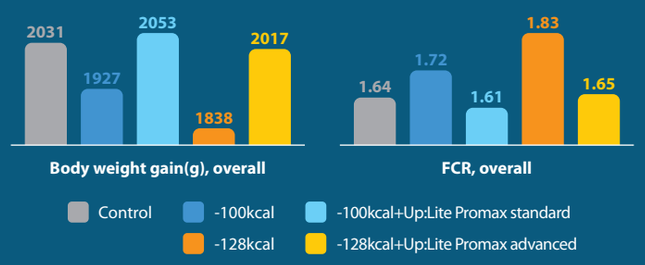
Structure of Galactoglucomannan

Nutritional wastage caused by mannan

Mannan binds to mannan binding lectin → Provokes unnecessary immune response without pathogen → Waste huge nutrition & energy

Broiler performance & cost saving trial

- Ross 308 broiler



Feed cost saving of Up:Lite Promax

Heat stability

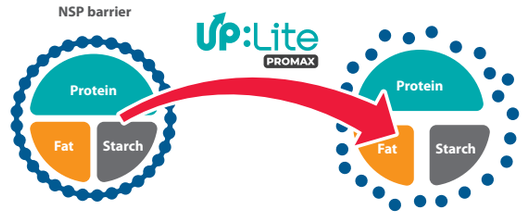
- Only 'naturally heat stable microorganisms' have been strictly chosen to produce Up:Lite Promax's enzymes.
- So, all enzymes in Up:Lite Promax have intrinsic heat stability up to 90˚C, for 3 min.
- Stable against most of feed pelleting processes.

"Excellent combination of enzymes to maximize feed efficiency, cost saving and productivity"

Up:Lite Promax :

A good combination of NSP enzymes

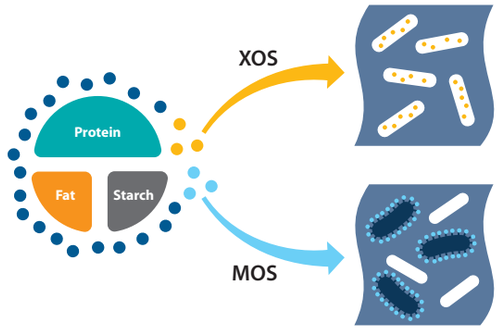
- Unique combination of Xylanase and Mannanase.
- Eliminates physical barrier of digestion, decreases feed viscosity and prevents nutrition waste in a same time.
- Contributes to feed cost saving.



Bonus effect 1 :

Generation of XOS and MOS

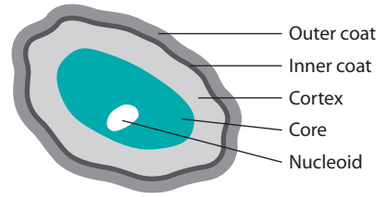
- Up:Lite Promax generates huge level of XOS (Xylo-oligosaccharide) and MOS (Mannan-oligosaccharide) during the breaking down process of NSP barriers.
- XOS is a prebiotic which selectively be taken by beneficial bacteria such as *bifidobacteria* and *lactobacilli*. And this will lead microflora to be more balanced and consequently, gut health will be improved.
- MOS removes pathogens and toxin from digestive tract by blocking binding sites of pathogens.



Bonus effect 2 :

Not only enzymes, but also probiotics

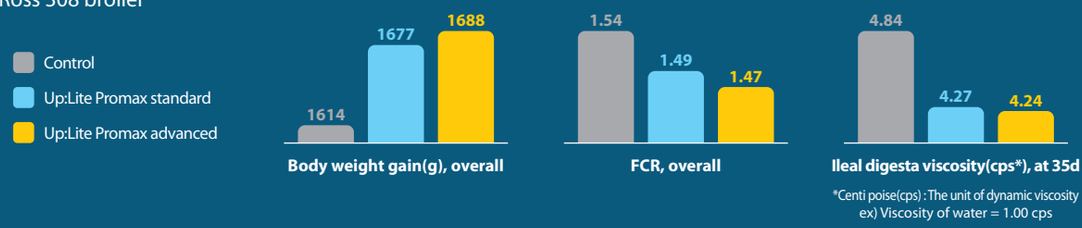
- Heat stable(90˚C), spore-forming *Bacillus subtilis* is included in Up:Lite Promax with good concentration(10^7 cfu/g).
- Provides synergistic benefits in digestion and contributes to gut microbiome balancing.



Spore-forming *Bacillus subtilis*

Broiler performance trial

- Ross 308 broiler



*Centi poise(cps) : The unit of dynamic viscosity
ex) Viscosity of water = 1.00 cps

Up:Lite Promax composition and matrix value

	Xylanase	Mannanase	Dosage	Matrix value
Standard	16,800 u/g	5,000 u/g	500g/ton	ME 100kcal/kg
Advanced	12,000 u/g	10,000 u/g	500g/ton	ME 120kcal/kg