

Fisugarpeptide Biology Engineering Co., LTD
Usage method of "Wuliangtai"

Emulsified fat powder must be "Fragrance tastable, Sweet effective". WLT people utilize self-breeding ultra-high sugar-resistant, acid-resistant, permeation-resistant, acid-producing strains, first use corn, broken rice, soybean meal, vegetable oil and Peru steam dried fishmeal (corn protein powder/alfalfa meal) five feedstuffs scientific formulated, sterilization, cooling and inoculation integrated auger, asynchronous enzymatic hydrolysis, vegetable oil & sugar-based homogeneous emulsification and synchronous fermentation acidification of mixed bacteria and high sugar 5 advanced technologies, direct enzymatic hydrolysis and emulsification were carried out to produce high-grade glycolipopeptide products "Wuliangtai", rich in emulsified fat, maltodextrin, glucose, fructose, lactic acid, yeast protein, small peptides, CLA (conjugated linoleic acid), probiotics, oligose, biological enzyme, calcium lactate, Leaven fragrant & sweet element and the unnamed growth factor.

WLT (short for "Wuliangtai") is an emulsified fat powder, five feedstuffs (corn, broken rice, Peru steam dried fishmeal (corn protein powder/alfalfa meal), soybean meal and compound vegetable oil enzymatic hydrolysis fermented medium and compound polysaccharides as the carrier , also a kind of emulsified fat powder that truly realizes the "Fragrance tastable, Sweet effective". WLT is original taste and flavor, sour and sweet, has good smell and fragrance, excellent attractants, can instead of emulsified fat powder, whey powder, plasma protein, glucose and fermented soybean meal, and etc. biological ingredients, truly realizes fat micro-emulsified, starch saccharified, protein of small peptides and outcome functionalized, was regarded as the pioneer of China's high-grade biological feed ingredients. Four functions: to improve feed intake, stimulate lactation and promote growth, especially the effect of improving feed intake is particularly obvious, long-term stable. In a sense, WLT is a kind of emulsified fat powder combined with emulsified fat, compound polysaccharide and enzymatic hydrolysis fermentation feed, the later two of which are as carrier, perfectly realize the mutual improvement among them.

WLT's nutritional composition can be simply concluded as "One kind of acid, Two kinds of bacteria, Three kinds of missible oil, Four kinds of sugar and 18% protein", the basic nutrition detailed in table 1, table 2, table 3, and the detailed explanation and brief diagram are as following:

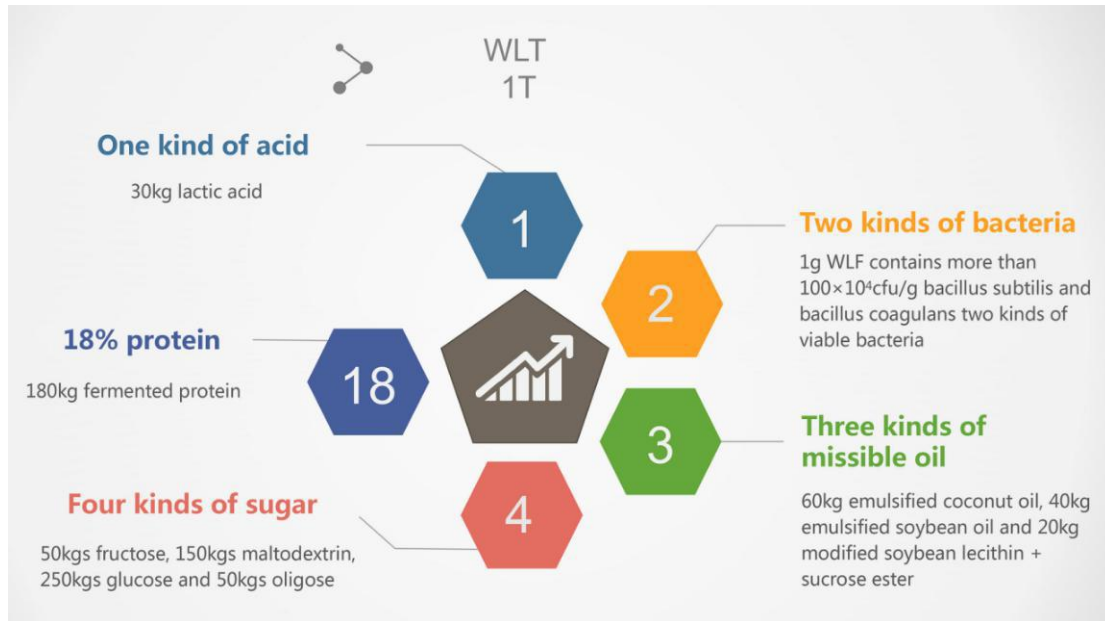
"One kind of acid" means that one ton WLT contains 30kg lactic acid.

"Two kinds of bacteria" means 1 gram WLT contains more than 100×10^4 cfu/g bacillus subtilis and bacillus coagulatorius two kinds of viable bacteria.

"Three kinds of missible oil" means one ton WLT contains 60kg emulsified coconut oil, 40kg emulsified soybean oil and 20kg modified soybean lecithin +sucrose ester.

"Four kinds of sugar" means one ton WLT contains 50kg fructose, 150kg maltodextrin, 250kg glucose and 50kg oligose.

"18% protein" means one ton WLT contains more than 180kg fermented protein.



Tab. 1 Quality standard of WLT

Item	Index	Item	Index	Item	Index
Moisture /%	≤8.0	Crude Ash /%	≤6.0	L- Lactic acid /%	≥2.0
Crude protein /%	≥18.0	Calcium /%	≤2.0	Peroxide valuemg/g	≤5.0
Small peptides and amino acid /%	≥2.0	Calcium Lactate /%	≥1.0	Probiotics cfu/g	≥0.5×10 ⁶
Crude fat /%	≥10.0	Total phosphorus /%	≤0.5	Bacillus licheniformis cfu/g	≥0.2×10 ⁶
Emulsified fat/ %	≥8.0	Available phosphorus /%	≤0.20	Bacillus subtilis cfu/g	≥0.2×10 ⁶
Maltodextrin /%	≥12.0	Lysine /%	≥0.65	Bacillus coagulans cfu/g	≥0.1×10 ⁶
Fructose /%	≥25.0	Methionine /%	≥0.26	Water solubility/ %	≥50.0
Glucose /%	≥20.0	Threonine /%	≥0.52	Starch/ %	No Purple Color under iodine
Crude fiber /%	≤6.0	Tryptophan /%	≥0.18	-	-

Tab. 2 Contents of main nutritional components of WLT (mean value of 5 times)

Item	Unit	Content	Item	Unit	Content
DE	kcal/kg	3400-3500	Lysine	%	0.80-1.02
ME	kcal/kg	3200-3250	Methionine	%	0.27-0.42
Moisture	%	3.2-6.1	Cystine	%	0.28-0.32
Crude protein	%	18.5-21.2	Threonine	%	0.68-0.75
Oligopeptide	%	2.3-3.8	Tryptophan	%	0.19-0.22
Crude fat	%	13.2-14.5	Arginine	%	1.30-1.42
Emulsified fat	%	10.5-10.8	Histidine	%	0.45-0.52
Maltodextrin	%	15.5-16.7	Isoleucine	%	0.75-0.82

Glucose	%	25.8-30.2	Leucine	%	1.70-1.83
Fructose	%	5.5-6.3	PHE	%	0.90-1.02
L-lactic acid	%	3.2-3.8	Tyrosine	%	0.65-0.74
Calcium	%	0.40-0.65	Valine	%	0.90-1.05
Total phosphorus	%	0.25-0.31	Lipid acid value after lactic acid neutralization	mgKOH/g	1.2-1.5
Available phosphorus	%	0.20-0.25	Peroxide value	mmol/kg	0.3-0.8
Crude ash	%	1.5-2.5	Total probiotics	cfu/g	(0.65-10.85)×10 ⁴

Tab. 3 digestible amino acid content of WLT (mean value)

Item	Unit	Content	Item	Unit	Content
Lysine	%	0.71-0.92	Histidine	%	0.41-0.48
Cystine	%	0.25-0.29	Leucine	%	1.55-1.61
Threonine	%	0.61-0.68	PHE	%	0.85-0.95
Tryptophan	%	0.17-0.20	Tyrosine	%	0.60-0.66
Arginine	%	1.20-1.23	Valine	%	0.82-0.91

WLT is rich in calcium, phosphorus and lactic acid, calcium content reaches 0.40-0.50%; The total phosphorus content reached 0.25-0.30%, of which the available phosphorus content reached 0.20-0.25%, calcium lactate content was above 1.0%, and lactic acid content was above 2.0%. See table 1 and table 2 for the basic nutrition. Therefore, for small and medium-sized feed enterprises and pig farms, can also add less calcium lactate, calcium formate, free of acidifier. After Small and medium-sized feed enterprises and pig farms use WLT, their feed raw materials and formula is very simple.

Should be mentioned: WLT is a kind of biological feed ingredients with obvious effect, mainly used for creep feed, conservation feed and Milking sow feed. Usage of WLT: Anthony pig creep feed: 80-100 kg/ton; Piglet conservation feed: 50-60 kg/ton; Milking sow feed: 40-50 kg/ton.

Some points need to be paid attention in the use of WLT:

1. Efficacy and characteristics of WLT

WLT is probiotics' enzymatic hydrolysis, fermentation and emulsification medium of five kinds of feedstuffs. Four functions: to improve feed intake, stimulate lactation and promote growth, especially the effect of improving feed intake is particularly obvious, long-term stable.

2. Types and proportions of feed ingredients WLT substituted

In creep feed, 50-60kg/ ton WLT substitutes: 6-10kg oil meal or 5-6kg soybean oil, 3-5kg fish meal, 3-5kg plasma protein, 8-10kg whey powder, 18-30kg fermented

soybean meal, 15-20kg glucose, 2-3kg acidifier, etc. However, WLT should not substitute sucrose (studies have shown that compound polysaccharides and emulsified fat can significantly increase dietary intake and are obviously food inducing). As long as the substitutions are well designed, the results are almost always good. This has been proven in many large enterprises.

In conservation feed, 40-50kg/ton WLT substitutes: 4-6kg oil meal or 2-3kg soybean oil, 2-4kg fish meal, 8-25kg fermented soybean meal, etc. But WLT do not substitute sucrose. As long as the substitutions are well designed, the results are almost always good. This has been proven in many large enterprises.

In milking sows feed, 30-50kg/ton of WLT substitutes: 3-5kg oil powder or 1.5-2kg soybean oil, 2-3kg fish meal, 8-25kg fermented soybean meal, etc. But WLT do not replace sucrose. As long as the substitutions are well designed, the results are all good and there is no doubt about it. This has been proven in many large enterprises. Because lactating sow's memory is super, postpartum feeding WLT, to improve feed intake is often not satisfied. It is suggested that start feeding lactating sows WLT one week or three days before the antenatal, and the increase of feeding intake is very obvious.

3. Measured protein and lysine addition and formulation of WLT

The measured protein of WLT is generally 19.0% or more, even 20.0%. If WLT is formulated according to 18.0% crude protein, it may result in a low dietary energy, resulting in a high ratio of feed to meat or a decrease in growth rate. Therefore, according to the different situations of customers, the protein of WLT should be calculated at 19.5% in the formulation.

WLT is rich in corn protein. When substitute a certain amount of soybean meal, fermented soybean meal, and fish meal, it sometimes leads to insufficient lysine in the diet. Therefore, an additional lysine of 0.5-1.0kg/ ton should be added to the formulation.

4. Limit the amount of WLT to replace fish meal or plasma protein

The growth of piglets may be affected by the excessive substitution of WLT for fish meal or plasma protein. For example, the amount of WLT added in the creep feed is 100kg/ ton, which can substitute 4-6kg of fish meal and 3-5kg of plasma protein. The added amount of WLT in the conservation feed is 50kg/ ton, which can substitute 3-5kg of fish meal. If the substitution is too much, the growth rate will be affected, but the amount of food intake is not significantly affected.

5. Hardness, fineness of granule and feeding effect of WLT

Some customers reported that the piglets' dietary intake increased significantly after adding WLT into the powder, while the piglets' dietary intake increased not significantly as the situation of the powder after adding WLT into the granule. Later, it

was found that the reason was that the content of sugar was very high, resulted in the increase of hardness of granule and the decrease of food intake. Therefore, it is suggested that the particle hardness should be reduced after adding WLT to the granule. Once the hardness of granule decreases and becomes soft, the food intake will increase obviously. Hence, after using WLT in the granule, try not to use flour.

For the creep feed and conservation feed, the finer WLT is crushed, the better the feeding effect is. Therefore, it is recommended that WLT mixed with corn and crushed to 50-80 mesh.

6. Freshness, color and feeding effect of WLT

The fresher WLT, the better the effect, and the more concentrated the sweetness. Therefore, it is recommended that the shelf life of WLT should not exceed 3 months.

7. Description of mycotoxin, acid value, peroxide value and crude fat detection methods

WLT is enzymatic hydrolysis fermented and emulsified product, without purification, the enzymatic hydrolysis fermentation of bacteria, lactic acid and other secondary metabolites and all sorts of small molecular nutrition product cause serious interference on the test results of WLT's crude fat, mycotoxins, acid value and peroxide value, especially the interference detection is particularly serious after the lactic acid is reduced the pH.

If mycotoxin is detected by ELISA, the pH value of WLT sample must be adjusted to be neutral. Otherwise, the error of detection result is very big, will be several times higher, even dozens of times. If the customers find it hard to believe, they can detect the mixed organic acid acidifiers on the market, and they will definitely find that the mycotoxin is very high. It can be confirmed that acidic pH value will seriously interfere with the detection of mycotoxin and other indicators in WLT.

In order to accurately detect mycotoxin in WLT, it is recommended that customers or testing agencies use "determination of aflatoxin in national standard feed by immunoaffinity column purification - high performance liquid chromatography (GB/T 30955-2014)" to detect the content of various mycotoxins in WLT. It has been proved that the national standard method can effectively eliminate the interfering substances in fermented products, and the detection results are very accurate.

In order to accurately detect the acid value of WLT, it is suggested that customers or testing agencies must adopt "national standard for food safety determination of acid value in food (GB5009.229-2016)" to detect the acid value of WLT.

In order to accurately detect the peroxide value of WLT, it is suggested that customers or testing agencies must adopt the "national standard for food safety determination of peroxide value in food (GB5009.227)" to detect the peroxide value

of WLT.

In order to accurately detect crude fat in WLT, it is suggested that customers or testing agencies must adopt the B method in "determination method of crude fat in feed (GB/T 6433-2006)" to determine the crude fat content in WLT.

Generally, WLT appears light yellow or brown yellow, the color of batches will be slightly different, but does not affect the quality of the product.

In actual production, quality requirements vary according to customer costs. The specific usage method is as follows:

1. Full substitution - cost reduction - good effect - upgrading and replacement

It will completely substitute emulsified fat powder, fermented soybean meal and glucose, avoid the use of acidifier, calcium lactate, probiotics, fructose and oligose, and reduce the use of whey powder, plasma protein, fish meal, vitamins and antibiotics. That's what product upgrades do.

2. Equivalent substitution - similar cost - better effect - upgrading and replacement

Equal proportion to substitute emulsified fat powder, fermented soybean meal and glucose, avoid the use of acidifier, calcium lactate, probiotics, fructose and oligose, reduce the use of whey powder (low protein), plasma protein, fish meal, vitamins and antibiotics. That's what product upgrades do.

3. 8-2 substitution - increases the cost - effect is very good - an alternative methods to innovate

Method 1: substitute 80% of corn, 20% of soybean meal or fermented soybean meal , namely 1 ton feed add 100 kg WLT, instead of 80 kg corn, 20 kg soybean meal or fermented soybean meal

Method 2: 80 kg market sold conservation feed directly mixed up with 20 kg WLT to feed. That's what product innovations do.

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