Nasekomo

INSTRUCTION SHEET

To be used as standardized control

SOFIA DIET

DESCRIPTION

This proposed, easy to replicate "Sofia diet" will be a powerful tool in both academic and industrial environments. Moreover, its use as standardized control will allow researchers around the world to compare strains, rearing conditions, assess effects of new ingredients and provide a solid foundation for fruitful scientific collaborations.

THE RECIPE

Hydrolyzed yeast	22%
Xanthan gum	0.80%
Sucrose	12%
Vitamin premix	0.20%
Water	65%

DIET PREPARATION

1. Prepare a dry mixture of sucrose, yeast and premix.
2. Add it to water with approximately 35˚C.
3. Mix with a kitchen mixer for 20 seconds.
4. Add xanthan and mix everything with a mixer – approximately 2 minutes.
5. Measure the pH – it should be 4.8-5.3.

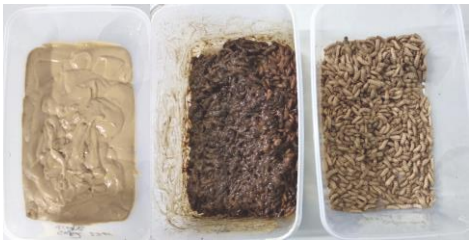
NUTRITIONAL VALUES, DM:

Crude Protein	26.44%
Crude Fiber	4.76%
Fat	1.83%
Ash	4.18%
DM	33.63%

WHEN FINISHING THE EXPERIMENT

1. Use an empty experimental box to tare and measure biomass + frass.
2. Measure the pH and moisture content of the frass.
3. Pour the content of the box (larvae+substrate) in a kitchen colander and rinse with water to clean the larvae from the frass.
4. Move larvae to a new container and dry them. Measure biomass.
5. Estimate the final weight of the substrate as the difference between the biomass and the total box content.

A B C



A – Initial Diet; B – Larvae in diet at 12 DOLs ; C-larvae after washing from diet.

REARING CONDITIONS:

- Temperature of the diet when adding the larvae – 29˚C±1
- Starting MC of the substrate – 70%±2
- Ambient temperature – 29˚C±1
- Ambient relative humidity – 55-60%
- Depth of layer - 4-6cm
- Experimental box size ~ 25*15.5*11.5 cm.
- Density – 900g of feed/1000 larvae
- Age of rearing – 5 to 12 DOLs

Experimental setup at Nasekomo

EXPECTED RESULTS AFTER 7 DAYS OF REARING (APPLIES FOR THE DESCRIBED CONDITIONS):

Average weight of individual [mg]	Survival rate [%]
300	> 95%

SOFIA DIET

Ingredient composition

Vitamin premix (poultry)

Components

Calcium carbonate, Rice bran, Monocalcium phosphate, L-lysine, DL-Methionine, L-Threonine, Sodium bicarbonate, Sodium chloride, vitamin-micronutrient premix, Choline chloride, Acidifier, Betaine, Probiotic, Hostazym, 6-phytase, Antioxidant

Chemical composition

Moisture content, %	6
Ash, %	57.5
Lysine, %	6.6
Methionine, %	5.05
Calcium, %	12.75
Phosphorus, %	4.5
Sodium, %	3.15
Cobalt, mg/kg	0.05

Nutritional composition

3a672a Vit A IU/kg	240000
3a671 Vit. D3 IU/kg	100000
3a700 Vit. E mg/kg	1800
3b103 Fe mg/kg	531
3b201 I mg/kg	20
3b405 Cu mg/kg	300
3b502 Mn mg/kg	2430
3b603 Zn mg/kg	1818
3b801 Se mg/kg	6

Technological additives

Antioxidant E321 mg/kg	80
E320 mg/kg	30
E330 mg/kg	80
1a338 mg/kg	60

Zootechnical additives

4a16 phytase OTU/kg	10000
4b1821 Bacillus subtilis DSM 17299	$16*10^9$
4a1617 Endo-1,4-β-xylanases EPU/kg	30000

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INSTRUCTION SHEET

Hydrolized yeast,

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Analytical constituents and specifications

Crude proteins %	42.7
Digestible proteins %	40.42
Dry matter %	94.65
Ash %	5.79
Crude fiber%	4.95
Crude fat %	2.77
Starch %	6.87
DEB mEq/100g	480
ABC3 mEq/kg	1.16
ABC4 mEq/kg	460
Pig digestible energy kcal/kg	3.686
Pig metabolized energy kcal/kg	3.369
Pig net energy kcal/kg	2.102
Rooster apparent metabolizable energy kcal/kg	2.742

Total AA, %

Alanine	2.82
Arginine	1.2
Aspartique acide (including asparagine)	3.85
Cysteine and cystine	0.07
Glutamique acide	3.77
Glycine	1.67
Histidine	0.78
Isoleucine	1.78
Leucine	2.75
Lysine	2.71
Methionine	0.47
Phenylalanine	1.62
Proline	1.41
Serine	2.26
Threonine	2.11
Total Methionine + Cysteine	0.54
Tryptophane	0.55
Tyrosine	1
Valine	2.1

Vitamins (typ. profile)

Vit B1 (thiamin)	1.16 mg/100g
Vit B2 (riboflavin)	2.47 mg/100g
Vit B3 (niacin)	7.04 mg/100g
Vit B4 (choline)	526 mg/100g
Vit B5 (pantothenic acid)	8.14 mg/100g
Vit B6 (pyridoxin)	1.62 mg/100g
Vit B7 (inositol)	115.1 mg/100g
Vit B8 (biotin)	51.1 µg/100g
Vit B9 (folic acid)	42 µg/100g
Vit B10 (PABA)	4.4 mg/100g
Vit B12 (cyanocobalamin)	0.704 µg/100g

Minerals (typ. profile)

Chromium	0.23 mg/kg
Iron	15.57 mg/100g
Manganese	16.96 mg/kg
Copper	7.59 mg/kg
Selenium	0.134 mg/kg
Zinc	18.14 mg/100g
Calcium	1.86 g/kg
Phosphorus	9.29 g/kg
Magnesium	1.44 g/kg
Sodium	2.89 g/kg
Potassium	17.1 g/kg
Chlorure	2.7 g/kg
Sulfure	398 mg/100g
Cobalt	1.19 mg/kg

Dietary fibers (typ. profile), %

Total dietary fibers (Lee method)	38.9
Insoluble dietary fibers	33.45
Soluble dietary fibers	5.45
NDF	2.17
ADF	1.45
ADL	1.2

**Xanthan gum and sucrose - available for human consumption.*