

Evaluation of the apparent digestibility (*in vivo*) of different feather meals in Pacific White Shrimp (*Litopenaeus vannamei*)

Objective:

To assess the apparent digestibility of *L. vannamei* by feeding four different produced feather meals compared to each other and to a control group without feather meal.

Material & methods:

- Location: Kasetsart University, Bangkok (Thailand)
- 15 shrimp/tank (5 treatments; 8 replicates)
- Shrimp weight: 8-10 g
- Acclimation period: one week
- Shrimp fed to excess (4% of body weight) two times daily
- After 30 min of feeding time, all uneaten pellets were removed.
- Feces was collected
- Chromic oxide 1 %
- Pelleting temperature: 70-80°C
- Pelleting time: 30-60 sec.
- Dried by 70-80 °C / 6 hrs

Group 1: Control fishmeal 60 %, feather meal 0 %

Group 2: Control 70 % + GoldMehl® FM 30 %

Group 3: Control 70 % + Feather Meal A 30 %

Group 4: Control 70 % + Feather Meal B 30 %

Group 5: Control 70 % + Feather Meal C 30 %

Results:

Digestibility of different feather meals in Pacific Whiteleg Shrimp

The *in vivo* digestibility of different feather meals: **GoldMehl® FM**, Feather Meal A, Feather Meal B and Feather Meal C in shrimp were determined by indirect method according to Cho, *et al.* (1985).

Apparent digestibility of nutrients presented in **Table 1**. The results indicated that **GoldMehl® FM** had higher nutrients digestibility than the other feather meals.

Table 1: *In vivo* nutrient digestibility of different feather meals in Pacific Whiteleg Shrimp

Test diets	Digestibility coefficient (%)	Protein digestibility (%)	Lipid digestibility (%)	Energy digestibility (%)
GoldMehl® FM	62.63	79.50	78.95	69.90
Feather Meal A	50.82	62.55	81.58	57.25
Feather Meal B	49.95	59.91	70.17	54.97
Feather Meal C	55.67	73.34	84.60	64.07

Table 2: *In vivo* diet digestibility with different feather meals in Pacific Whiteleg Shrimp

Test diets	Digestibility coefficient (%)	Protein digestibility (%)	Lipid digestibility (%)	Energy digestibility (%)
Fishmeal	66.89	73.15	91.93	81.44
GoldMehl® FM	65.61	75.06	88.04	77.98
Feather Meal A	62.07	69.97	88.83	74.18
Feather Meal B	61.81	69.18	85.41	73.50
Feather Meal C	63.52	73.21	89.73	76.23

Table 3: *In vitro* nutrient digestibility of different feather meals in Pacific Whiteleg Shrimp

Test diets	Pepsin 0.02 % digestibility (%)	Protein 0.02 % digestibility (%)
GoldMehl® FM	80.59	71.93
Feather Meal A	80.96	72.11
Feather Meal B	87.14	73.56
Feather Meal C	87.83	74.60

Table 4: *In vitro* digestibility of nutrients of different feather meals by Pacific Whiteleg Shrimp

Raw material diets	Soluble Protein (%)	Amino acid (%)
Fishmeal	96.66	48.79
GoldMehl® FM	58.82	31.46
Feather Meal A	44.40	25.52
Feather Meal B	44.10	34.80
Feather Meal C	59.85	42.24

Conclusion

- *In vivo* digestibility expresses the real metabolism of nutrients in the animal -> crucial for performance.
- **GoldMehl® FM** is more *in vivo* digestible than other feather meals – reverse relation of *in vitro* and *in vivo* results.