

Technical Bulletin #39

— FEEDING TRIAL PERFORMANCE REPORT —

Summary: A trial was conducted at the University of Idaho by Dr. Ronald Hardy to determine the apparent digestibility coefficient (ADC) of DPS for rainbow trout. It was determined that DPS 45SD is highly digestible and could serve a vital purpose in fish feed applications.

Materials and Methods: Rainbow trout were used for this experiment to determine the ADC for the protein and amino acids. The values were obtained by feeding test ingredients combined with a basal diet of casein, gelatin and dextrose. The feces were collected and tested to calculate the ADC. The amino acids were tested at an outside independent laboratory on the combined feed and the collected feces. Chromic oxide was used as the indicator in the feed. There were three test treatments for this trial: basal (control) diet, DPS 45A and DPS 45SD. DPS 45A is a Dried PorSol product, which is 45% protein and dried using soybean meal as a carrier. DPS 45SD is a Dried PorSol product, which is 45% protein and spray-dried with no carrier.

Results: The ADC's are shown for total protein and amino acids in table one below. The ADC value for the basal diet fed alone was 94.4% for protein, which is close to the five-year average of 95% from this university. The ADC value for DPS 45A for protein was 85.3%. This ADC is lower than most fish meals used in fish feeds (88-94%), but higher than other proteins from animal sources, at least for fish. The ADC values of the DPS 45A were likely lowered by the soybean meal carrier used to manufacture the DPS 45A.

The DPS 45SD value is over 100%, which means that it is completely digestible. As proteins approach 100% digestibility, there is so little protein in the feces samples that analytical error becomes a significant factor, leading to calculated values that exceed 100%. The key point of this trial is that DPS 45SD is highly digestible and could serve a purpose in certain fish feed applications. These products would be useful in diets for larval fish or other stages of fish life history where a highly digestible protein source is desirable. Because of its high protein solubility, it may also serve as an attractant for some fish species.

TABLE 1: Apparent Digestibility Coefficient of Basal diet and test ingredients. All values in percent.

Nutrient	Basal Diet	DPS 45SD (mean)	DPS 45A (mean)
Dry Matter	81.6	104.2	55.9
Crude Protein	94.4	103.0	85.3
Alanine	95.1	102.4	88.2
Arginine	96.7	101.8	93.9
Aspartic Acid	91.0	104.6	83.8
Glutamic Acid	95.1	108.3	88.1
Glycine	93.9	103.6	83.8
Histidine	96.1	101.8	86.1
Isoleucine	96.4	101.6	91.0
Leucine	98.3	99.3	89.5
Lysine	97.0	100.1	90.1
Methionine	97.9	101.3	95.2
Phenylalanine	97.9	96.1	74.2
Proline	94.4	120.1	88.1
Serine	93.8	114.0	81.4
Threonine	94.4	101.2	80.6
Tyrosine	98.6	98.7	91.2
Valine	97.1	100.8	90.3
Total	95.5	103.8	87.7

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