

Table 10. List of feed ingredients that are used or have the potential to be used as protein and/or energy supplement in catla feed (nutrient content in % dry matter)

Feed ingredients		Primary use (please tick)			Dry matter (%)	Crude protein (%)	Gross energy (kJ/g)	Inclusion (% max)	Main nutritional interest	Main nutritional deficiencies	Processing restrictions
		Protein supplement	Energy supplement	Both							
<b>Animal origin</b>	Fishmeal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	86.0	55.6	14.94		EAA	Met	
	Shrimp meal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	98.4	31.2			EAA		
	Bone meal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	75.0	36.0	8.37		Ca, P		Poor binder
	Crab meal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	30.0	32.0	14.53				
	Slaughterhouse waste	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	18.5	51.6	23.30				
	Blood meal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	89.5	88.5	14.97		Lys	Met, Iso	
	Silk worm pupae meal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	20.0	54.2	17.54				
<b>Plant origin</b>	<b>Oilseed meal and cakes</b>										
	Groundnut oil cake	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	94.0	40.1	12.63				ANF, aflatoxin risk
	Groundnut oil meal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	89.7	37.3	9.02				ANF, aflatoxin risk
	Soybean cake	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	84.8	47.5	12.60		Lys		
	Cotton seed oil cake	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	87.9	26.4	10.77			Lys, Met	
	Sesame oil cake	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	90.0	32.2	12.70				
	<b>Cereal grains</b>										
	Maize	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	89.6	5.1	13.92	35			Poor water stability
	Millet	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	88.4	12.0	11.92				
	Wheat flour	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	87.9	17.8	18.79	35			
	<b>Cereal by-products</b>										
	Rice bran	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	91.3	13.7	10.11				Poor water stability
	Rice polish	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	91.6	12.4	13.20				
	Wheat bran	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	90.7	13.9	12.54				
	Black gram bran	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	88.8	7.0	7.05				
	Molasses	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	68.3	4.5	15.17				
	Leaf meals										
	Waqter hyacinth	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	8.5	1.2	16.87	30			
	Duckweed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	8.1	1.7	16.61	20			
	Water velvet	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	5.0	19.3	16.38				
Single cell protein											
Algal SCP - Spirulina sp.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	93.3	58.6	20.30	20				

Lys = Lysine; EAA = essential amino acid; Met = Methionine; Cys = Cystine; Ca = Calcium; P = Phosphorus; Iso = Isoleucine; ANF = Anti-nutritional factors; SCP = Single cell protein

Source: Tacon (1987); <http://www.fao.org/docrep/003/T0555E/T0555E00.htm>; [www.fao.org/DOCREP/003/V4430E/V4430E04.htm](http://www.fao.org/DOCREP/003/V4430E/V4430E04.htm)