

Supplementary Table S1. Summary of aquaculture nutrition literature evaluating dietary cowpea.

Aquaculture species		Cowpea		Experimental design		
Common name	Scientific name	Scientific name - Type	Formulaion inclusion level (%)	Design	Major findings	Reference
Black tiger prawn	<i>Penaeus monodon</i>	<i>V. unguiculata</i> - Whole	29.5	D and GT	Dehulling increased the nutritional value of cowpea	[50]
		<i>V. unguiculata</i> - Dehulled	24.68			
Black tiger prawn	<i>Penaeus monodon</i>	<i>V. unguiculata</i> - Whole	20	GT	Cowpea suitable at 20% contributing to low cost formulation	[51]
Whiteleg shrimp	<i>Litopenaeus vannamei</i>	<i>V. unguiculata</i> - Whole	15	GT	Cooking and extruding increased the nutritional value of cowpea	[52]
		<i>V. unguiculata</i> - Dehulled	15			
		<i>V. unguiculata</i> - Cooked	15			
		<i>V. unguiculata</i> - Germinated	15			
Giant freshwater prawn	<i>Macrobrachium rosenbergii</i>	<i>V. unguiculata</i> - Extruded	15	FM replacement	Cowpea can replace 30-45% of FM without impairing performance	[62]
		<i>V. unguiculata</i> - Whole	15, 30, 45, and 60			
		<i>V. unguiculata</i> - Whole	30 (D) 20.5 (GT)			
		<i>V. unguiculata</i> - Whole	100			
Indian carps - mrigal and rohu	<i>Cirrhinus mrigala</i> and <i>Labeo rohita</i>	<i>V. unguiculata</i> - Whole	100	D and GT	Cowpea was the least performing ingredient compared to soybean and mung bean	[48]
		<i>V. unguiculata</i> - Hydrothermally processed	100			
Nile tilapia	<i>Oreochromis niloticus</i>	<i>V. catieng</i> - Whole	10, 16, 18, 30, 32, 40, and 50	FM replacement with different dietary protein	Cowpea can replace up to 20-33% FM without impairing performance	[53]
Nile tilapia	<i>Oreochromis niloticus</i>	<i>V. unguiculata</i> - Whole	9, 18, 28, 37, 83 35	FM replacement	Cowpea can be added up to 20% without adverse effects. Processing treatments improve the nutritional value of cowpea, however increase cost	[49]
		Heat treated (48C, dry heat)	33			
		Heat treated (70C, dry heat)	33			
		Heat treated (119C, wet heat)	31			
		Dehulled treated (48C, dry heat)	33			
		Dehulled treated (70C, dry heat)	33			
		Dehulled treated (119C, wet heat)	32			
Nile tilapia	<i>Oreochromis niloticus</i>	<i>V. unguiculata</i> - Cowpea protein concentrate	5, 10, 15, 20, and 25	FM replacement	Highest growth with 20-30% FM replacement and best protein efficiency at 40%	[61]

D: digestibility, ID: in-vitro digestibility, GT: growth trial, FM: fishmeal.