

has a lower FCR properties than the other immunostimulant feeds under normal conditions, whereas under *Aeromonas* exposure, levamisole shows lower FCR values. Furthermore, when compared to the *Aeromonas* infected fish with control diets, the fish fed with immunostimulant mixed feeds exhibited significantly decreased FCR values.

3.2 Morphometric and growth-related traits

The following morphometric characterisation of the fish in all of the treatment groups was assessed by measuring Body Length (BL), Body Width (BW), Body Depth (BD), Weight (W), Head Length (HL), Head Depth (HD), Eye Diameter (ED), Pupil Diameter (PD), Caudal Peduncle Length (CPL), Caudal Peduncle Width (CPW), Caudal Fin Length (CFL), Dorsal Fin Length (DFL), Pectoral Fin Length (PcFL), Pelvic Fin Length (PIFN), and Anal Fin Length (AFL).

3.2.1 Morphometric characterisation of healthy fish fed with different immunostimulants

Table 2, depicts the initial and final measurements of morphometric parameters of healthy fish fed with control and immunostimulant mixed feeds. Table 3 presents the net gain of morphometric parameters of healthy fish fed with control and immunostimulant mixed feeds. From these results, it was found that the morphometric parameters including body length, body width, and weight were significantly varied with different immunostimulant feeds. While, the parameters including HL, HD, ED, PD, CPL, CPW, CFL, DFL, PcFL, PIFL, and AFL have not exhibited significant variation with the different immunostimulant feeds.

Table 2 Morphometric characteristics of healthy fish fed with control and immunostimulant mixed feed

S. No.	Parameter	Type of Diet											
		Control		Vitamin C		Vitamin E		Chitin		Chitosan		Levamisole	
		I	F	I	F	I	F	I	F	I	F	I	F
1	BL (cm)	15.9	17.3	18.7	21	21	23	16.4	18	9.8	11.7	13.3	15.1
2	BW (cm)	3.8	4.5	5	6	6.7	7.5	4	4.5	3	3.4	3	3.6
3	W (g)	154.5	173.2	148.7	171.5	161.3	208.8	155.7	171.2	130.2	158.3	145.8	176.6
4	HL (cm)	3.8	4.3	5	4.5	5.3	6	4	4.5	2.4	2.8	3.2	3.8
5	HD (cm)	2.9	3.4	4.1	4.5	4.5	5	3	3.5	1.4	1.7	1.7	2.8
6	ED (cm)	0.8	1	0.7	0.9	0.8	1	0.7	0.8	0.6	0.7	0.8	0.9
7	PD (cm)	0.4	0.5	0.35	0.5	0.4	0.5	0.3	0.4	0.3	0.4	0.3	0.4
8	CPL (cm)	1.6	2.3	2.6	3	2.7	3	2	2.5	1.1	1.4	1.7	2.1
9	CPW (cm)	1.7	1.9	1.8	2.3	2.1	2.5	1.5	1.9	0.8	1	1.1	1.5
10	CFL (cm)	3.7	4.1	4.3	4.8	4.4	5	3.9	4.4	2.1	2.7	3.1	3.6
11	DFL (cm)	3.3	3.8	3.9	4.3	3.5	4	3.5	4	2.4	2.9	2.7	3.1
12	PcFL (cm)	2.4	2.9	2.4	3	3	3.4	2.4	2.7	1.9	2.3	2.1	2.6
13	PIFL (cm)	2.3	2.7	2.9	3.5	2.9	3.3	2.6	3	1.6	2	1.9	2.4
14	AFL (cm)	2.7	3.1	2.7	3.2	2.9	3.5	2.3	2.7	1.2	1.6	1.7	2.2

Table 3 Net growth of morphometric parameters of healthy fish fed with control and immunostimulant mixed feed after 30 days of treatment

S. No.	Morphometric parameter	Type of Diet					
		Control	Vitamin C	Vitamin E	Chitin	Chitosan	Levamisole
1	BL (cm)	1.4	2.3	2	1.6	1.9	1.8
2	BW (cm)	0.7	1	0.8	0.5	0.4	0.6
3	W (g)	18.7	22.8	47.5	15.5	28.1	30.8
4	HL (cm)	0.5	0.5	0.7	0.5	0.4	0.6
5	HD (cm)	0.5	0.4	0.5	0.5	0.3	0.7
6	ED (cm)	0.2	0.2	0.2	0.1	0.1	0.1
7	PD (cm)	0.1	0.15	0.1	0.1	0.2	0.1
8	CPL (cm)	0.7	0.4	0.3	0.5	0.3	0.4
9	CPW (cm)	0.2	0.5	0.4	0.4	0.1	0.4
10	CFL (cm)	0.4	0.5	0.6	0.5	0.6	0.5
11	DFL (cm)	0.5	0.4	0.5	0.5	0.5	0.4
12	PcFL (cm)	0.5	0.6	0.4	0.3	0.5	0.5
13	PIFL (cm)	0.4	0.6	0.4	0.4	0.4	0.5
14	AFL (cm)	0.4	0.5	0.6	0.4	0.4	0.5