

## **SUPPLEMENTARY**

Table S1. Ingredient formulation and the proximate composition of the different oils in experimental diets fed to fish.

Figure S1. Gas Chromatogram of fatty acid composition and sn-2 fatty acid composition of different oils in experimental diets. (A), (B) and (C) are chromatograms of the fatty acid composition of PPP, MO and OPL, respectively, and (D), (E) and (F) are chromatograms of sn-2 fatty acid composition of PPP, MO and OPL, respectively.

Figure S2. Microbial community diversity evaluated by alpha-diversity indices of ACE, Chao 1, Shannon, Simpson.

Table S1. Ingredient formulation and the proximate composition of the different oils in experimental diets fed to fish.

Ingredients (%)	PPP group	MO group	OPL group
Fish meal	16	16	16
Corn gluten meal	4	4	4
Soybean meal	24	24	24
Peanut meal	6	6	6
Chicken powder	30	30	30
Beer yeast	3	3	3
Wheat flour	6.7	6.7	6.7
Freshwater fish premix	0.5	0.5	0.5
Choline	0.1	0.1	0.1
Calcium dihydrogen phosphate	1	1	1
Chromium trioxide	0.5	0.5	0.5
Methionine	0.2	0.2	0.2
$\alpha$ - starch	2	2	2
PPP	6	0	0
MO	0	6	0
OPL	0	0	6
<b>Proximate composition (%)</b>			
Moisture	8.31	8.43	8.36
Crude protein	48.36	48.53	48.78
Crude lipid	11.39	11.78	11.86
Ash	9.87	9.89	9.91

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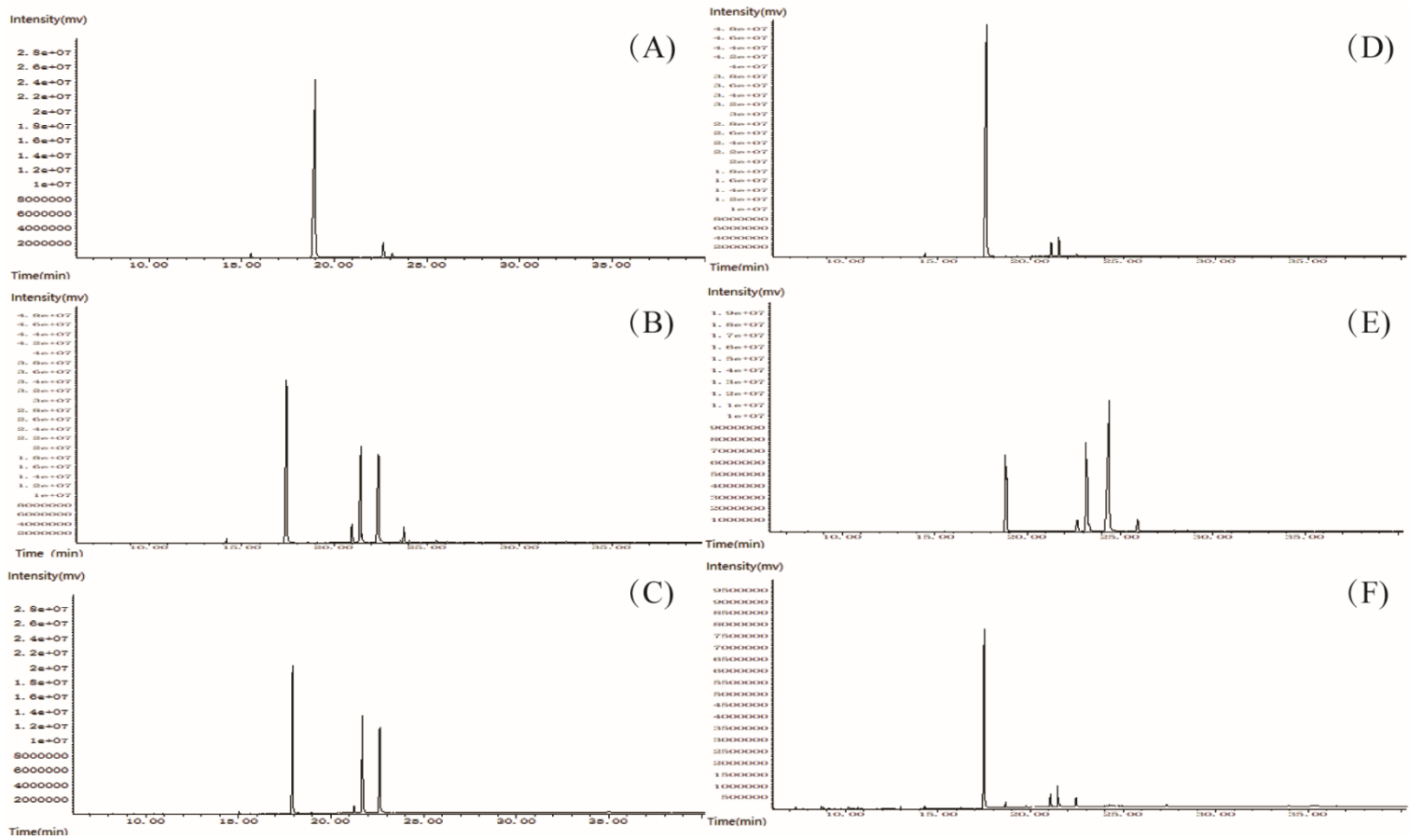


Figure S2. Microbial community diversity evaluated by alpha-diversity indices of ACE, Chao 1, Shannon, Simpson.

