

Lipids from *Hermetia illucens*, an Innovative and Sustainable Source

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Table S1. Proximate lipid content of BSF biomass reared on different organic wastes (Unit: % of dry matter)

SUBSTRATE	DEVELOPMENTAL STAGE	LIPID CONTENT (%)	REFERENCES
Chicken feed	Prepupal	33.6	[21]
Biogas Digestate	Prepupal	21.8	[21]
Vegetable waste	Prepupal	37.1	[21]
Restaurant waste	Prepupal	38.6	[21]
Cafeteria waste	Prepupal	31.8 ±0.3	[81]
Vegetable and fruit waste (7:3)	Larval	26.3	[77]
Vegetable and fruit waste (17:3)	Larval	33.0±0.2	[189]
Vegetable and fruit waste (17:3)	Prepupal	30.8±0.2	[189]
Fruit waste	Larval	40.7	[189]
	Prepupal	47.4	[77]
Fruit waste	Prepupal	46.8	[189]

Apple	Larval	36.1 ±1.5	[13]
Banana	Larval	27.9±3.9	[13]
Apple and Banana (1:1)	Larval	33.4±1.8	[13]
Spent Grain	Larval	22.5±1.5	[13]
Brewery by-products	Larval	29.9±0.7	[77]
Apple and Spent Grain (1:1)	Larval	20.1±4.3	[13]
Banana and spent grain (1:1)	Larval	23.1±2.3	[13]
Winery by-products	Larval	32.2	[77]
Brown algae (<i>Ascophyllum nodosum</i>)	Larval	8.1±0.9	[191]
Food waste	Prepupal	35.0	[192]
	Prepupal	37.2	[193]
Pig manure	Prepupal	36.5±3.9	[193]
Poultry manure	Prepupal	36.2±3.5	[193]
Cow manure	Prepupal	35.7±2.9	[193]
Fermented maize stover	Prepupal	30.5	[194]
Gainsville diet + 6% xylose (from lignocelluloses)	Larval	34.60	[68]
Cricket waste	Larval	38.7	[12]
Locust waste	Larval	25.8	[12]

Table S2. Fatty acids profile of the BSF biomass reared on different organic waste (Unit: % of dry matter).

SUBSTRATE	DEVELOPMENTAL STAGE	Capric (C10:0)	Lauric (C12:0)	Myristic (C14:0)	Palmitic (C16:0)	Palmitoleic (C16:1n-7)	Stearic (C18:0)	Oleic (C18:1n9)	Linoleic (C18:2n6)	Linolenic (C18:3n3)	SFA	MUFA	PUFA	REFERENCES
Chicken feed	Prepupal	1.4	57.4	7.3	9.7	NA	1.4	7.5	NA	0.7	77.4	10.0	12.6	[21]
Biogas Digestate	Prepupal	1.2	43-7	6.9	10.1	NA	1.8	7.9	NA	0.8	64.8	19.1	9.6	[21]
Vegetable waste	Prepupal	1.6	60.9	9.5	8.7	NA	1.1	5.7	NA	1.4	82.8	9.5	7.0	[21]
Restaurant waste	Prepupal	2.0	57.6	7.1	10.3	NA	1.0	8.0	NA	1.1	78.3	12.0	9.4	[21]
Cafeteria waste	Prepupal	NA	44.9	8.3	13.5	2.4	2.1	12.0	9.9	0.1	69.9	14.9	12.5	[81]
Vegetable and fruit waste (7:3)	Larval	NA	52.1	10.4	13.9	NA	2.6	8.5	7.0	1.7	78.9	12.3	8.8	[77]
Vegetable and fruit waste (17:3)	Larval	0.5	28.1	3.8	5.8	1.6	0.7	4.3	1.3	10.3	73.5	14.9	11.6	[189]
Vegetable and fruit waste (17:3)	Prepupal	1.2	61.9	9.1	7.9	2.4	1.1	5.3	2.4	4.7	84.5	8.4	7.1	[189]
Fruit waste	Larval	NA	57.4	9.6	13.1	NA	1.8	9.3	4.1	0.7	81.9	13.3	4.8	[77]
Brewery by-productS	Larval	NA	32.4	6.7	20.4	NA	1.8	9.2	23.6	2.5	61.3	12.7	26.0	[77]
Winery by-products	Larval	NA	34.7	6.6	18.9	NA	2.8	12.5	17.6	0.4	61.0	19.0	18.0	[77]
Brown algae (<i>Ascophyllum nodosum</i>)	Larval	NA	23.9	6.7	16.6	2.5	4.1	17.9	18.6	1.6	52.5	22.2	24.2	[191]
Food waste	Prepupal	1.4	41.1	0.4	12.2	3.2	2.4	14.1	13.8	NA	NA	NA	NA	[192]
	Prepupal	2.3	56.2	9.3	10.3	2.4	1.9	7.1	10.3	NA	NA	NA	NA	[193]
Restaurant waste and Rice straw	Larval	3.8	27.8	8.1	14.2	4.5	7.6	22.5	1.8	2.1	NA	NA	NA	[195]
Pig manure	Prepupal	2.1	56.4	8.5	11.0	2.2	1.5	7.1	10.2	NA	NA	NA	NA	[193]

Poultry manure	Prepupal	1.6	56.9	8.2	8.4	1.9	1.4	7.0	10.7	NA	NA	NA	NA	[193]
Cow manure	Prepupal	1.7	54.2	7.0	7.9	2.1	1.2	6.3	11.0	NA	NA	NA	NA	[193]
Dairy manure	Larval	3.1	35.6	7.6	14.8	3.8	3.6	23.6	2.1	NA	NA	NA	NA	[82]
Fermented maize stover	Prepupal	0.8	22.4	4.4	13.1	1.2	1.9	23.3	24.0	1.3	45.4	24.9	25.4	[194]
Gainsville diet + 6% xylose	Larval	NA	26.9	NA	19.2	NA	7.9	28.8	NA	NA	NA	NA	NA	[68]
Soybean curd residue + Bacteria (<i>Lactobacillus buchneri</i>)	Larval	1.5	39.6	6.5	13.1	2.7	2.1	11.5	17.5	1.4	NA	NA	NA	[73]
Soybean curd residue	Larval	1.7	36.9	5.9	13.2	3.2	1.7	12.1	17.0	1.2	NA	NA	NA	[73]

Table S3. Fish species fed with BSF.

TYPE OF BSF FEED ADMINISTERED TO FARMED FISH	SPECIES FED WITH BSF	REFERENCES
Larval meal/Prepupal meal	Channel catfish (<i>Ictalurus punctatus</i>)	[196]
Larval meal	Yellow catfish (<i>Pelteobagrus fulvidraco</i>)	[23,197]
Partially defatted larval meal	African catfish (<i>Clarias gariepinus</i>)	[198]
Larval meal	Nile tilapia (<i>Oreochromis niloticus</i>)	[199,200]
Prepupal meal		[201]
Larval meal	Blue tilapia (<i>Oreochromis aureus</i>)	[196]
Prepupal meal	Rainbow trout (<i>Oncorhynchus mykiss</i>)	[103,202-204]
		[205,206]
Partially defatted larval meal		[207,208]

Partially defatted larval meal/oil		[181,209]
Larval meal/Prepupal meal		[156,210]
Larval meal		[211]
Prepupal meal		
Partially defatted prepupal meal		
Prepupal meal	European seabass (<i>Dicentrarchus labrax</i>)	[212]
Larval meal/oil	Atlantic salmon (<i>Salmo salar</i>)	[155,159]
Partially defatted larval meal		[158,205, 213]
Larval meal		[214,215]
Larval meal/partially defatted		[215]
Prepupal meal	Zebrafish (<i>Danio rerio</i>)	[216]
Highly defatted meal	Siberian sturgeon (<i>Acipenser baerii</i>)	[217]
Oil	Jian carp (<i>Cyprinus carpio</i> var. <i>Jian</i>)	[218]
Larval meal		[219]
Partially defatted larval meal	Meagre (<i>Argyrosomus regius</i>)	[220]
Highly defatted meal	Climbing perch (<i>Anabas testudineus</i>)	[221]