

Supplementary information

Table S1. Geographical sourcing effect on macronutrient composition of commonly consumed edible insects in Eastern D. R. Congo

Insect species/Territory	Protein (g/100g)	Fat (g/100g)	Ash (g/100g)	MC (%)
<i>Acheta domesticus</i>				
Fizi	37.58±1.56a	24.00±2.00a	11.83±0.61a	57.23±1.57b
Kabare	37.19±4.58a	20.99±0.79b	5.09±0.16b	65.50±1.80a
Mwenga	35.25±0.92a	22.70±1.00ab	4.90±1.00b	57.74±1.02b
Walungu	38.18±4.33a	21.43±0.78b	4.94±0.61b	66.25±1.21a
p-value	0.628	0.028	<0.001	<0.001
<i>Apis mellifera</i>				
Idjwi	19.07±1.10a	24.49±0.87ab	8.79±3.92a	70.06±1.02b
Kabare	20.08±0.49a	24.38±1.16ab	4.72±0.36b	71.23±2.08b
Kalehe	19.66±2.51a	26.29±1.72a	4.89±0.31b	78.84±2.11a
Walungu	19.82±1.02a	22.27±0.91b	4.41±0.59b	71.59±1.72b
p-value	0.793	0.023	0.043	<0.001
<i>Gnathocera trivittata</i>				
Kabare	34.40±0.66a	17.78±0.29a	4.94±0.61a	62.21±1.68a
Walungu	36.13±2.92a	16.90±0.7a	6.57±0.86a	56.40±1.78b
p-value	0.305	0.115	0.055	0.015
<i>Grillotalpa africana</i>				
Kabare	30.70±1.10a	26.73±0.63a	5.26±0.46a	63.66±0.35b
Walungu	32.22±1.25a	21.23±0.96b	4.45±0.33a	79.72±1.45a
p-value	0.136	<0.001	0.067	<0.001
<i>Imbrasia oyemensis</i>				
Kalehe	31.18±1.09b	27.95±1.41a	6.93±0.18a	79.05±2.30a
Mwenga	56.68±1.20a	15.68±1.00b	5.92±1.01a	66.58±1.07b
p-value	<0.001	<0.001	0.166	<0.001
<i>Locusta migratoria</i>				
Idjwi	29.63±0.90b	21.97±0.15ab	5.17±1.02a	69.03±1.60b
Kabare	35.25±1.53a	21.14±0.25ab	5.67±0.50a	59.82±0.22c
Kalehe	30.08±0.36b	16.95±0.73c	5.56±0.68a	77.34±2.32a
Walungu	30.22±1.08b	23.10±1.51a	4.54±1.17a	69.22±1.46b
p-value	<0.001	<0.001	0.437	<0.001
<i>Macrotermes subhyalinus</i>				
Fizi	29.00±1.06a	27.10±0.93a	8.93±0.68a	45.47±0.55c
Kabare	25.77±2.05b	26.34±1.59a	5.01±0.39b	70.33±0.59b
Walungu	27.88±2.19ab	24.90±1.23b	4.55±0.52b	77.27±2.85a
p-value	0.011	0.021	<0.001	<0.001
<i>Nomadacris septemfasciata</i>				
Kabare	24.54±1.57a	38.28±1.53a	5.50±0.82a	56.43±1.16b

Walungu	30.61±4.86a	11.97±1.29b	4.30±0.16a	66.31±0.84a
p-value	0.073	<0.001	0.069	<0.001
<i>Rhynchophorus</i>				
<i>phoenicis</i>				
Fizi	31.55±0.56b	25.80±1.31b	6.92±1.62a	68.84±0.56a
Idjwi	39.19±3.44a	30.60±1.05a	7.02±0.69a	68.14±0.32a
p-value	0.011	0.008	0.924	0.133

Mean values (n=3)±SE. All values except moisture are expressed on dry weight.

Values in the same column with the same following letter do not significantly differ (p<0.05).

MC: Moisture content.

Table S2. Geographical sourcing effect on mineral profile (mg/100g) of commonly consumed edible insects in Eastern D. R. Congo

Insect species/Territory	Potassium	Sodium	Magnesium	Iron	Calcium	Zinc
<i>Acheta domesticus</i>						
Fizi	148.25±0.49a	160.67±0.81a	47.60±0.60a	6.60±0.20a	144.27±4.56a	15.85±0.35a
Kabare	144.56±1.56a	146.00±1.00c	46.60±9.00a	6.27±0.23a	143.00±4.00a	14.50±0.10b
Mwenga	67.27±3.88c	157.40±1.00b	59.60±20.00a	4.10±0.10c	131.00±1.00b	12.20±1.00c
Walungu	110.93±0.67b	161.23±0.93a	40.90±0.56a	5.87±0.29b	87.00±1.65c	15.40±0.36ab
p-value	<0.001	<0.001	0.280	<0.001	<0.001	<0.001
<i>Apis mellifera</i>						
Idjwi	98.37±1.37ab	143.50±1.42d	49.27±6.33a	9.24±0.06a	147.40±0.56a	14.68±0.63a
Kabare	94.20±3.13b	154.70±0.40b	50.10±2.90a	6.60±0.20b	124.00±1.00b	15.00±0.60a
Kalehe	101.70±3.54a	152.23±1.24c	51.72±3.97a	6.50±0.85b	124.33±2.52b	14.53±0.72a
Walungu	74.79±1.94c	158.67±1.53a	45.33±0.78a	4.87±0.21c	126.33±1.53b	14.27±0.47a
p-value	<0.001	<0.001	0.321	<0.001	<0.001	0.399
<i>Gnathocera trivittata</i>						
Kabare	19.54±0.63a	161.30±0.30a	32.40±2.50b	8.80±0.10a	128.50±7.50b	14.40±0.50a
Walungu	105.38±1.20b	144.23±1.07b	54.77±1.30a	6.50±0.53b	148.33±3.21a	15.83±0.90a
p-value	<0.001	<0.001	<0.001	<0.001	0.013	0.496
<i>Grillotalpa africana</i>						
Kabare	46.91±1.41b	168.00±0.20a	24.30±0.34b	5.09±0.21a	129.50±0.50b	15.10±0.40a
Walungu	81.03±1.03a	141.47±0.72b	42.17±1.21a	5.53±0.38a	162.00±2.00a	16.30±0.44a
p-value	<0.001	<0.001	<0.001	0.373	<0.001	0.101
<i>Imbrasia oyemensis</i>						
Kalehe	193.16±2.15a	159.23±0.88a	66.96±9.08a	7.47±0.49a	107.33±1.53a	14.36±1.63a
Mwenga	56.43±1.19b	154.44±1.16b	60.57±0.86a	7.57±0.90a	102.00±1.00b	12.38±1.22a
p-value	<0.001	0.004	0.306	0.643	0.007	0.158
<i>Locusta migratoria</i>						
Idjwi	73.43±0.97d	157.18±1.02b	56.00±4.40b	4.15±0.05b	131.49±0.50b	13.31±0.38b
Kabare	77.75±1.26c	154.00±0.56c	51.40±1.10bc	6.00±0.10a	153.00±4.00a	13.10±0.80b

Kalehe	87.40±2.17b	157.54±1.51b	63.43±6.26a	5.93±0.40a	125.33±1.53c	13.19±1.37b
Walungu	108.05±1.27a	162.90±0.66a	44.83±0.60c	7.17±0.64a	122.67±2.52c	17.13±0.35a
p-value	<0.001	<0.001	0.002	0.003	<0.001	<0.001
<i>Macrotermes subhyalinus</i>						
Fizi	480.47±0.39b	157.67±0.58b	28.73±1.12b	5.57±0.42a	139.10±0.85a	17.57±0.75a
Kabare	160.43±0.03c	163.90±0.40a	20.60±1.60c	5.90±0.23a	135.50±0.50b	17.80±0.40a
Walungu	520.44±19.77a	164.33±0.68a	67.87±0.97a	5.20±0.20a	97.33±1.53c	15.10±0.36b
p-value	<0.001	<0.001	<0.001	0.123	<0.001	0.009
<i>Nomadacris septemfasciata</i>						
Kabare	54.37±2.15b	162.70±1.40a	29.80±6.50b	6.80±0.20a	160.50±2.50a	13.20±0.30a
Walungu	116.71±0.77a	162.07±1.69a	56.27±1.16a	7.79±0.36a	153.00±1.00b	13.03±0.70a
p-value	<0.001	0.621	0.002	0.101	0.009	0.865
<i>Rhynchophorus phoenicis</i>						
Fizi	28.93±0.73a	169.33±0.58a	32.30±0.30b	8.57±0.42a	176.05±0.45a	18.30±0.60a
Idjwi	27.65±0.76a	170.67±1.35a	58.93±4.46a	5.43±0.81b	98.97±0.35b	13.00±2.05b
p-value	0.101	0.349	<0.001	<0.001	<0.001	0.029

Mean values (n=3)±SE on wet basis. Values in the same column with the same following letter do not significantly differ (p<0.05).

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Table S3. Geographical sourcing effect on sensory attributes of commonly consumed edible insects in Eastern D. R. Congo

Insect species/Territory	Appearance	Aroma	Texture	Taste	After taste	Overall acceptability
<i>Acheta domesticus</i>						
Fizi	3.90±0.84a	4.53±0.91a	4.03±0.80a	3.85±0.77a	3.85±0.74a	4.03±0.52a
Kabare	3.93±1.90a	3.88±1.77b	3.90±1.85a	4.23±1.56a	4.15±1.46a	4.02±0.66a
Mwenga	3.78±0.97a	4.85±0.83a	4.05±0.81a	3.83±0.96a	3.88±1.07a	4.08±0.68a
Walungu	3.75±0.84a	4.75±0.74a	4.08±0.76a	3.75±0.93a	3.70±0.85a	4.01±0.60a
p-value	0.892	<0.001	0.909	0.215	0.297	0.896
<i>Apis mellifera</i>						
Idjwi	4.78±0.92ab	4.50±0.99ab	4.35±0.92a	5.70±0.72a	5.20±0.69a	4.91±0.42a
Kabare	4.30±1.99b	3.95±1.89b	3.98±1.42a	4.23±1.76bc	4.48±1.36b	4.19±0.86b
Kalehe	4.58±1.06ab	4.73±1.13a	4.48±1.30a	4.73±1.28b	4.75±1.33ab	4.65±0.58a
Walungu	5.10±1.17a	4.40±1.06ab	3.23±1.03b	3.93±0.89c	3.53±1.15c	4.04±0.71b
p-value	0.036	0.047	<0.001	<0.001	<0.001	<0.001
<i>Gnathocera trivittata</i>						
Kabare	3.75±1.79a	4.33±1.62b	3.50±1.30b	4.23±1.49a	4.40±1.81a	4.04±0.81a
Walungu	2.95±1.08b	5.00±0.93a	4.28±0.78a	4.35±0.83a	3.93±0.86a	4.10±0.50a
p-value	0.018	0.025	0.002	0.645	0.138	0.547
<i>Grillotalpa africana</i>						
Kabare	3.48±1.48b	4.03±1.48b	4.70±1.02b	4.68±1.31b	4.50±1.15a	4.28±0.50b
Walungu	4.13±0.76a	5.40±0.74a	5.23±0.73a	5.30±0.72a	4.88±0.76a	4.99±0.46a
p-value	0.016	<0.001	<0.001	<0.001	0.090	<0.001
<i>Imbrasia oyemensis</i>						
Kalehe	3.83±1.62a	3.95±1.20b	4.08±1.19b	4.25±1.63a	3.93±1.94b	4.01±0.81b
Mwenga	3.73±1.47a	4.65±1.29a	4.78±1.12a	4.88±1.28a	4.90±1.06a	4.61±0.43a
p-value	0.867	0.014	0.008	0.060	0.007	<0.001
<i>Locusta migratoria</i>						
Idjwi	4.88±1.04ab	5.20±0.99b	5.00±1.04a	5.35±0.95ab	4.60±0.74b	5.01±0.50a

Kabare	4.88±1.65ab	5.20±1.32b	4.83±1.34a	5.13±1.11ab	5.00±1.34ab	5.01±0.64a
Kalehe	5.03±1.19a	5.08±1.00b	5.10±0.98a	5.03±1.10b	4.83±0.90ab	5.01±0.72a
Walungu	4.48±0.93b	5.88±0.79a	5.25±0.74a	5.55±0.78a	5.08±1.02a	5.25±0.54a
p-value	0.022	0.003	0.326	0.047	0.017	0.431
<i>Macrotermes subhyalinus</i>						
Fizi	5.25±0.71b	6.23±0.77a	5.28±0.68b	6.30±0.82ab	6.25±0.84a	5.86±0.56a
Kabare	5.85±1.14a	6.15±0.83a	5.90±0.84a	5.93±1.00b	6.25±0.81a	6.02±0.43a
Walungu	5.25±0.71b	6.35±0.74a	5.28±0.75b	6.48±0.72a	6.35±0.83a	5.94±0.56a
p-value	0.003	0.513	<0.001	0.015	0.823	0.322
<i>Nomadacris septemfasciata</i>						
Kabare	4.73±1.26a	5.35±1.14a	5.65±1.19a	5.13±1.16b	5.03±1.10a	5.18±0.57a
Walungu	4.63±0.90a	5.68±1.12a	5.60±0.96a	5.75±0.78a	5.20±1.02a	5.37±0.61a
p-value	0.684	0.203	0.834	0.006	0.462	0.238
<i>Rhynchophorus phoenicis</i>						
Fizi	6.08±0.57a	5.38±0.59a	5.58±0.56a	6.38±0.70a	6.03±0.66a	5.89±0.36a
Idjwi	4.28±0.85b	4.53±1.04b	4.40±1.01b	4.88±0.88b	4.53±0.72b	4.52±0.41b
p-value	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

5 Mean values (n=40)±SE. Values in the same column with the same following letter do not significantly differ (p<0.05).

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