

Supplementary Material

Microbial Ecology of Selected Traditional Ethiopian Fermented Products

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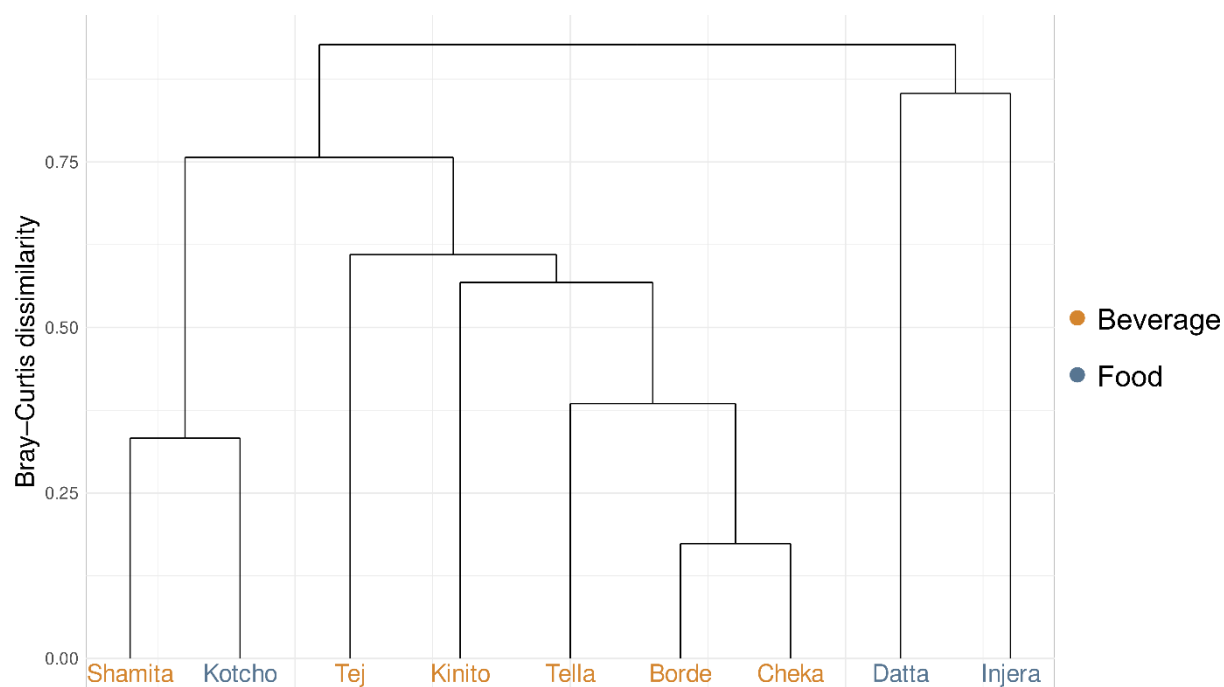
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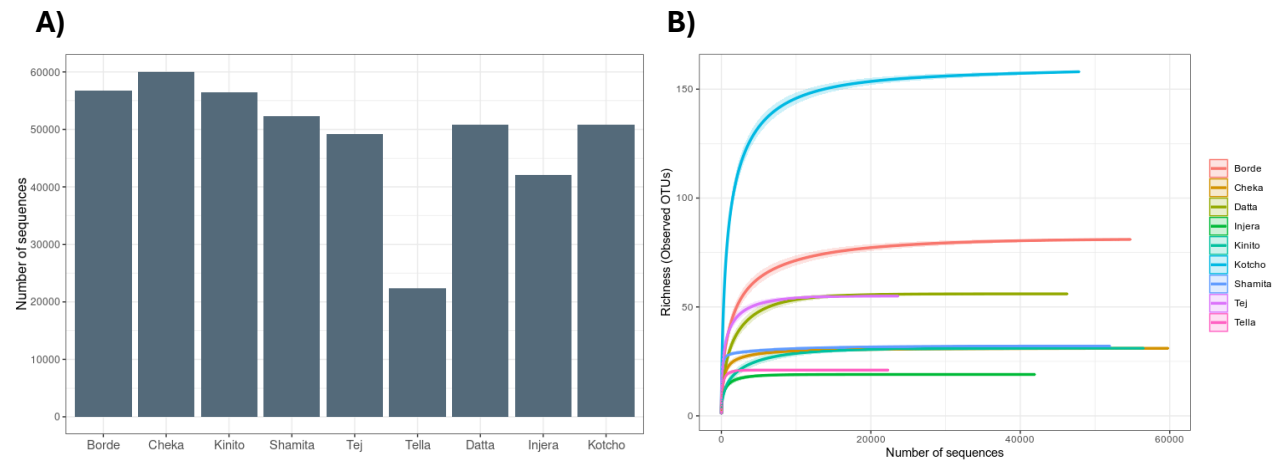
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Supplementary Figure S1. UPGMA dendrogram of nutrient profiles. This figure shows a UPGMA dendrogram based on the Bray-Curtis similarity of the nutrient profiles, including free sugars, alcohol and organic acids, in the fermented foods, including a condiment, and beverages studied.



Supplementary Figure S2. (A) Number of high-quality reads obtained for each fermented sample. (B) Rarefaction curves of the samples.

Supplementary Table 1. Relative Abundances (%) of ASV in Nine Fermented Products. This table presents the relative abundances (%) of Amplicon Sequence Variants (ASV) in the nine fermented products. The last taxonomic level at which representatives were classified is shown (Sheet 2 Excel file).

Supplementary Table 2. Taxonomic Affiliation of the Strains Isolated from Traditional Foods and Beverages Based on their 16S rRNA gene Sequence Similarity.

Strain	Fermented product	Closest type strain (Accession number)	Similarity (%)
D9-2	Tej	<i>Moraxella osloensis</i> A1920 ^T (NR_104936.1)	99.22
D9-3	Tej	<i>Staphylococcus hominis</i> subsp. <i>novobiosepticus</i> GTC 1228 ^T (NR_041323)	99.80
D9-5	Tej	<i>Staphylococcus epidermidis</i> strain <i>Fuselle</i> ^T = NBRC 100911 ^T	99.68
D9-7	Tej	<i>Acetobacter okinawensis</i> JCM 25146 1-35 ^T (NR_113546.1)	99.90
D9-8	Tej	<i>Acetobacter indonesiensis</i> NBRC 16471 ^T (NR_113847.1)	99.90
D9-10	Tej	<i>Acetobacter fabarum</i> R-36330 ^T (NR_113556.1)	100
D9-14	Tej	<i>Lactocaseibacillus paracasei</i> ATCC 25302 ^T (NR_113337.1)	99.67
D9-16	Tej	<i>Acetobacter tropicalis</i> NBRC 16470 ^T (NR_113846.1)	100
D9-19	Tej	<i>Lentilactobacillus hilgardii</i> NBRC 15886 ^T (NR_113817.1)	99.86
D9-20	Tej	<i>Saccharomyces cerevisiae</i>	99.85
D10-1	Borde	<i>Paenibacillus polymyxa</i> DSM 36 ^T (NR_114810.1)	99.59
D10-5	Borde	<i>Acetobacter pasteurianus</i> subsp. <i>pasteurianus</i> LMG 1262 = NBRC 106471 ^T (NR_118169.1)	99.77
D10-6	Borde	<i>Streptomyces coelicolor</i> DSM 40233 ^T (NR_116633.1)	99.67
D10-32	Borde	<i>Kazachstania humilis</i>	99.66
D10-9	Borde	<i>Paenibacillus ottowii</i> MS2379 ^T (NR_180200.1)	99.11
D10-14	Borde	<i>Moraxella osloensis</i> A1920 ^T (NR_104936.1)	99.10
D10-15	Borde	<i>Lactocaseibacillus paracasei</i> NBRC 15889 ^T (NR_113337.1)	99.89
D10-23	Borde	<i>Lentilactobacillus parabuchneri</i> JCM 12493 ^T (NR_041294.1)	99.79
D10-27	Borde	<i>Lentilactobacillus hilgardii</i> NBRC 15886 ^T (NR_113817.1)	100
D10-31	Borde	<i>Companilactobacillus paralimentarius</i> DSM 13238 ^T (NR_114844.1)	99.88
D10-33	Borde	<i>Lentilactobacillus diolivorans</i> JKD6 ^T (NR_037004.1)	99.90
D10-46	Borde	<i>Lentilactobacillus buchneri</i> JCM 1115 ^T (NR_041293.1)	99.79
D11-1	Kinito	<i>Acetobacter fabarum</i> LMG 24244 ^T (NR_113556.1)	100
D11-5	Kinito	<i>Leuconostoc pseudomesenteroides</i> KCTC 3652 LMG 11482 ^T (NR_109004.1)	99.90
D11-13	Kinito	<i>Secundilactobacillus collinoides</i> JCM1123 ^T (NR_024645.1)	99.57
D11-23	Kinito	<i>Staphylococcus condimenti</i> CIP105760 ^T (NR_116435.1)	100
D11-24	Kinito	<i>Liquorilactobacillus nagelii</i> LuE10 ^T (NR_119275.1)	99.90

Strain	Fermented product	Closest type strain (Accession number)	Similarity (%)
D12-1	<i>Shamita</i>	<i>Lactiplantibacillus plajomi</i> NB53 ^T (NR_136785.1)	89.34
D12-2	<i>Shamita</i>	<i>Moraxella osloensis</i> DSM 6998 ^T (NR_113392.1)	99.58
D12-8	<i>Shamita</i>	<i>Solibacillus silvestris</i> HR3-23 ^T (NR_028865.1)	100
D12-14	<i>Shamita</i>	<i>Staphylococcus pseudoxylopus</i> S04009 ^T (NR_180150.1)/ <i>Staphylococcus saprophyticus</i> subsp. <i>saprophyticus</i> ATCC 15305 ^T = NCTC 7292 ^T (NR_074999.2)	100
D12-26	<i>Shamita</i>	<i>Lactiplantibacillus plantarum</i> JCM 1149 ^T (NR_115605.1)	100
D12-31	<i>Shamita</i>	<i>Levilactobacillus zymae</i> R-18615 ^T (NR_042241.1)	99.69
D12-7	<i>Shamita</i>	<i>Lactiplantibacillus fabifermentans</i> DSM 21115 ^T (NR_113339.1)	99.53
D13-2	<i>Kotcho</i>	<i>Paenibacillus seodonensis</i> DCT-19 ^T (NR_165702.1)	99.57
D13-3	<i>Kotcho</i>	<i>Lysinibacillus mangiferihumi</i> M-GX18 ^T (NR_118146.1)	98.89
D13-9	<i>Kotcho</i>	<i>Acetobacter indonesiensis</i> NBRC 16471 ^T (NR_113847.1)	99.90
D13-11	<i>Kotcho</i>	<i>Paenibacillus dongdonensis</i> KUDC0114 ^T (NR_134112.1)	99.57
D13-14	<i>Kotcho</i>	<i>Microbacterium ginsengisoli</i> Gsoil 259 ^T (NR_041516.1)	97.09
D13-29	<i>Kotcho</i>	<i>Secundilactobacillus paracollinoides</i> DSM 15502 ^T (NR_042322.1)	99.70
D13-40	<i>Kotcho</i>	<i>Lentilactobacillus kisonensis</i> YIT 11168 ^T (NR_041658.1)	99.30
D13-46	<i>Kotcho</i>	<i>Lactiplantibacillus plantarum</i> JCM 1149 ^T (NR_115605.1)	99.90
D13-59	<i>Kotcho</i>	<i>Lactiplantibacillus fabifermentans</i> DSM 21115 ^T (NR_113339.1)	100
D13-27	<i>Kotcho</i>	<i>Pichia occidentalis</i>	100
D13-41	<i>Kotcho</i>	<i>Staphylococcus haemolyticus</i> JCM 2416 ^T	99.39
D13-44	<i>Kotcho</i>	<i>Staphylococcus hominis</i> subsp. <i>novobiosepticus</i> GTC 1228 ^T	99.14
D13-6	<i>Kotcho</i>	<i>Streptomyces coelicolor</i> DSM 40233 ^T (NR_119342.1)	99.15
D13-15	<i>Kotcho</i>	<i>Leuconostoc miyukkimchii</i> M2 ^T (NR_109072.1)	99.18
D14-1	<i>Tella</i>	<i>Paenibacillus humicus</i> PC-147 ^T (NR_042577.1)	99.48
D14-2	<i>Tella</i>	<i>Paenibacillus seodonensis</i> DCT-19 ^T (NR_165702.1)	99.54
D14-5	<i>Tella</i>	<i>Lactiplantibacillus fabifermentans</i> DSM 21115 ^T (NR_113339.1)	100
D14-6	<i>Tella</i>	<i>Paucilactobacillus vaccinostrercus</i> NRIC 1075 ^T (NR_112541.1)	100
D14-8	<i>Tella</i>	<i>Acetobacter indonesiensis</i> NBRC 16471 ^T (NR_113847.1)	99.9
D14-15	<i>Tella</i>	<i>Peribacillus acanthi</i> L28 ^T (NR_179899.1)	99.88
D14-20	<i>Tella</i>	<i>Acetobacter fabarum</i> LMG 24244 ^T (NR_113556.1)	99.81

Strain	Fermented product	Closest type strain (Accession number)	Similarity (%)
D14-21	Tella	<i>Levilactobacillus brevis</i> ATCC 14869 ^T = DSM 20054 ^T (NR_116238.1)	100
D14-23	Tella	<i>Companilactobacillus paralimentarius</i> DSM 13238 ^T (NR_114844.1)	99.72
D14-24	Tella	<i>Lactiplantibacillus pentosus</i> 124-2 ^T (NR_029133.1)/ <i>Lactiplantibacillus plantarum</i> CIP 103151 ^T (NR_104573.1)	99.90
D14-26	Tella	<i>Lacticaseibacillus paracasei</i> ATCC 25302 ^T (NR_117987.1)	100
D14-32	Tella	<i>Lactobacillus helveticus</i> NBRC 15019 ^T (NR_113719.1)	99.54
D14-33	Tella	<i>Lacticaseibacillus pantheris</i> LMG 21017 ^T (NR_025189.1)	99.88
D15-4	Cheka	<i>Acetobacter indonesiensis</i> NBRC 16471 ^T (NR_113847.1)	99.90
D15-7	Cheka	<i>Lacticaseibacillus paracasei</i> R094 ^T (NR_025880.1)	100
D15-18	Cheka	<i>Lacticaseibacillus paracasei</i> R094 ^T (NR_025880.1)	99.90
D15-9	Cheka	<i>Lentilactobacillus buchneri</i> JCM 1115 ^T (NR_041293.1)	99.89
D15-11	Cheka	<i>Lentilactobacillus diolivorans</i> JKD6 ^T (NR_037004.1)	99.77
D15-30	Cheka	<i>Lentilactobacillus kisonensis</i> YIT 11168 ^T (NR_041658.1)	99.68
D16-2	Datta	<i>Weissella sagaensis</i> X0750 ^T (NR_175448.1)	100
D16-3	Datta	<i>Weissella cibaria</i> II-I-59 ^T (NR_036924.1)	100
D16-8	Datta	<i>Kocuria palustris</i> TAGA27 ^T (NR_026451.1)	100
D16-11	Datta	<i>Secundilactobacillus collinoides</i> JCM1123 ^T (NR_024645.1)	99.76
D17-1	Injera	<i>Acetobacter fabarum</i> LMG 24244 ^T (NR_113556.1)	100
D17-6	Injera	<i>Acetobacter okinawensis</i> JCM 25146 1-35 ^T (NR_113546.1)	99.88
D17-10	Injera	<i>Acetobacter tropicalis</i> NBRC 16470 ^T (NR_113846.1)	100
D17-13	Injera	<i>Brevibacillus borstelensis</i> NBRC 15714 ^T (NR_113799.1)	100
D17-14	Injera	<i>Peribacillus acanthi</i> L28 ^T (NR_179899.1)	100
D17-16a	Injera	<i>Lacticaseibacillus paracasei</i> R094 ^T (NR_025880.1)	100
D17-18	Injera	<i>Lentilactobacillus kisonensis</i> YIT 11168 ^T (NR_041658.1)	99.58
D17-25	Injera	<i>Acetobacter indonesiensis</i> NBRC 16471 ^T (NR_113847.1)	100