

Assessment of 16S rRNA Gene-based Phylogenetic Diversity of Archaeal Communities in Halite-crystals Salts Processed from Natural Saharan Saline Systems of Southern Tunisia

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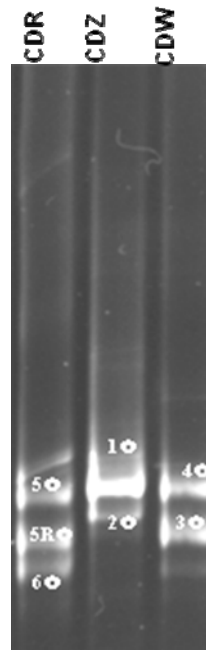


Figure S1. Archaeal DGGE patterns of 16S rDNA gene sequences of the V3 variable regions' (567 bp) obtained from different salt samples. Lane1: CDR; lane2: CDW; lane3: CDZ. Bands marked with a numbered asterisk were excised from gel, re-amplified and sequenced. The gradient of the urea and formamide ranged from 20% to 55%.

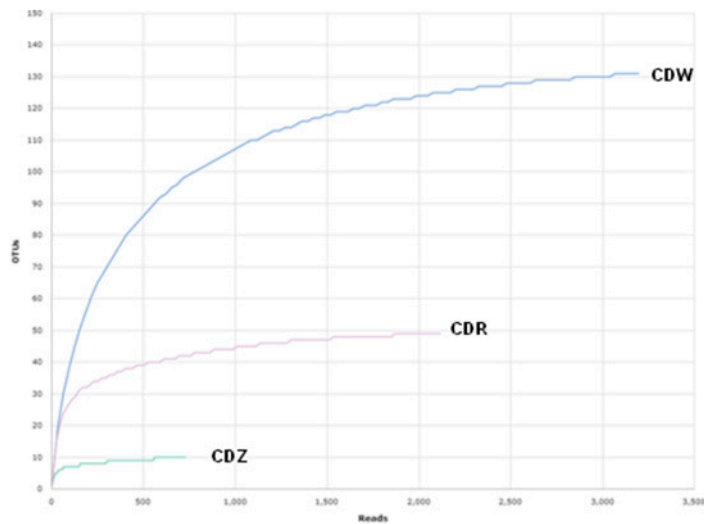


Figure S2: Genus-level rarefaction curves of CDZ, CDR and CDW sample based on the 16S rDNA sequences analyzed.

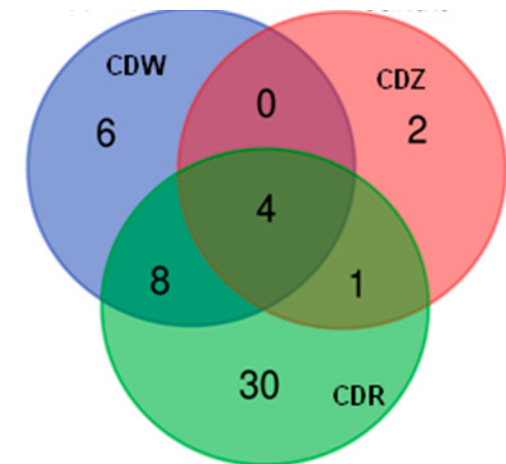


Figure 3. Venn diagrams showing the unique and shared OTUs (3% distance level) identified based on cultured, 16S rRNA libraries, DGGE and metataxonomic approaches, for CDR, CDW and CDZ respectively.

Table S1: Unique and shared genera between CDW, CDR and CDZ samples based on cultured, 16S rRNA libraries , DGGE and metataxonomic approaches

Samples	Total	Genera
CDR/CDW/CDZ	4	<i>Halorhabdus</i> , <i>Halorubrum</i> , <i>Haloarcula</i> , unclassified <i>Halobacteriaceae</i>
CDW/CDZ	8	<i>Halonotius</i> , <i>Halorussus</i> , <i>Halovenus</i> , <i>Haloplanus</i> , Uncultured haloarchaeon (JN714452), unclassified <i>Haloferacaceae</i> , Uncultured haloarchaeon (EU869371), <i>Halobellus</i>
CDZ/CDZ	1	<i>Halogeometricum</i>
CDW	6	<i>Halobonum</i> , uncultured euryarchaeote (FN391256), <i>Haladaptatus</i> , <i>Haloquadratum</i> , Unclassified in higher taxonomic rank, <i>Halosimplex</i>
CDZ	2	<i>Haloferax</i> , unclassified <i>Halobacteriaceae</i>
CDR	30	uncultured <i>Natronomonas</i> (FN391194), <i>Halomarina</i> , <i>Haloparvum</i> , <i>Halolamina</i> , Uncultured haloarchaeon (EU869371), <i>Halobacterium</i> , <i>Halopenitus</i> , <i>Halomicrobium</i> , <i>Salinirussus</i> , <i>Halostella</i> , <i>Natronoarchaeum</i> , <i>Halorientalis</i> , uncultured archaeon (EU722671), <i>Haloredivivus</i> , <i>Haloarchaeobius</i> , <i>Saliphagus</i> , <i>Halovivax</i> , <i>Halorubellus</i> , <i>Salinarchaeum</i> , <i>Halapricum</i> , <i>Halohasta</i> , <i>Halobaculum</i> , uncultured archaeon (KI543180), <i>Natrinema</i> , Uncultured haloarchaeon (FN391274), <i>Halomicroarcula</i> , <i>Natronomonas</i> , <i>Haloterrigena</i> , unclassified <i>Natrialbaceae</i> , Uncultured haloarchaeon (EF533953)

Tables S2: List of shared and unique genera identified in CDW sample based on both cultured and uncultured-dependant approaches

Approches	Total	Shared and unique genera
16S rRNA libraries/Cultured /DGGE /Miseq analysis	2	<i>Halorubrum</i> , <i>Haloarcula</i>
16S rRNA libraries/ Miseq analysis	1	<i>Haloquadratum</i>
16S rRNA libraries	2	Unclassified <i>Halobacteriaceae</i> , <i>Halonotius</i>
Cultured	3	Strain ZA20911, <i>Haloferax</i> , Strain LDS1
DGGE	1	unclassified <i>Halobacteriaceae</i>
Miseq analysis	14	<i>Halobonum</i> <i>Haloplanus</i> <i>Halovenus</i> Unclassified phylum <i>Halorhabdus</i> unclassified <i>halobacteriaceae</i> (EU869371) <i>Haladaptatus</i> unclassified <i>halobacteriaceae</i> (JN714452) unclassified <i>halobacteriaceae</i> (FN391256) <i>Haloferacaceae_uc</i> unclassified <i>Halobacteriaceae</i> <i>Halorussus</i> <i>Halosimplex</i> <i>Halobellus</i>

Tables S3: List of shared and unique genera identified in CDR sample based on both cultured and uncultured-dependant approaches

Approches	Total	Shared and unique genera
16S rRNA libraries/Cultured / Miseq analysis	1	<i>Halorubrum</i>
/ DGGE / Miseq analysis	1	<i>Natronomonas</i>
Cultured	2	Strain 209ZB09 (FN391189), unclassified_ <i>Halobacteriaceae</i>
DGGE	1	unclassified_ <i>Halobacteriaceae</i> (LC205717)
Miseq analysis	40	<i>Halomarina</i> , <i>Haloparvm</i> , <i>Halolamina</i> , <i>Halobacterium</i> , <i>Unclassified Halobacteriaceae</i> (EF533953) , <i>Halorhabdus</i> , <i>Halonotius</i> , <i>Halopenitus</i> , <i>Halomicrobium</i> , <i>Salinirussus</i> , <i>Halostella</i> , <i>Natronoarchaeum</i> <i>Halorientalis</i> <i>Unclassified Natrionalbaceae</i> <i>Haloredivivus</i> <i>Halogeometricum</i> <i>Halorussus</i> <i>Haloarchaeobius</i> <i>Unclassified Halobacteriaceae</i> <i>Unclassified Haloferacaceae</i> (K1543180) <i>Saliphagus</i> <i>Halovivax</i> <i>Unclassified Haloferacaceae</i> (JN714452) <i>Halorubellus</i> <i>Unclassified Nanosalina</i> (FN391274) <i>Unclassified Nanosalina</i> (EU869371) <i>Halovenus</i> <i>Haloplanus</i> <i>Halapricum</i> <i>Salinarchaeum</i> <i>Halohasta</i> <i>Unclassified Haloferacaceae</i> <i>Halobaculum</i> <i>Natrinema</i> <i>Halomicroarcula</i> <i>Unclassified Halobacteriaceae</i> (EU722671) <i>Unclassified Haloferacaceae</i> (FN391194) <i>Haloterrigena</i> <i>Haloarcula</i> <i>Halobellus</i>

Table S4: List of shared and unique genera identified in CDZ sample based on both cultured and uncultured-dependant approaches

Approches	Total	Shared and unique genera
16S rRNA libraries/Cultured /DGGE / Miseq analysis	1	<i>Halorubrum</i>
16S rRNA libraries /Cultured/ Miseq analysis	1	<i>Haloarcula</i>
Cultured/ Miseq analysis	1	<i>Halogeometricum</i>
16S rRNA libraries	4	<i>Halonotius</i> , <i>Halolamina</i> , <i>Haloquadratum</i> , <i>Halorubellus</i>
Cultured	2	Strain SFH1A041, Strain ntu 13
Miseq analysis	5	<i>Haloferax</i> , <i>Halobacteriaceae_uc</i> , <i>Halorhabdus</i> , <i>Haloarcula</i> , <i>Halogeometricum</i> , <i>Halorubrum</i>