# Sewage sludge microbial structures and relations to their sources, treatments, and chemical attributes

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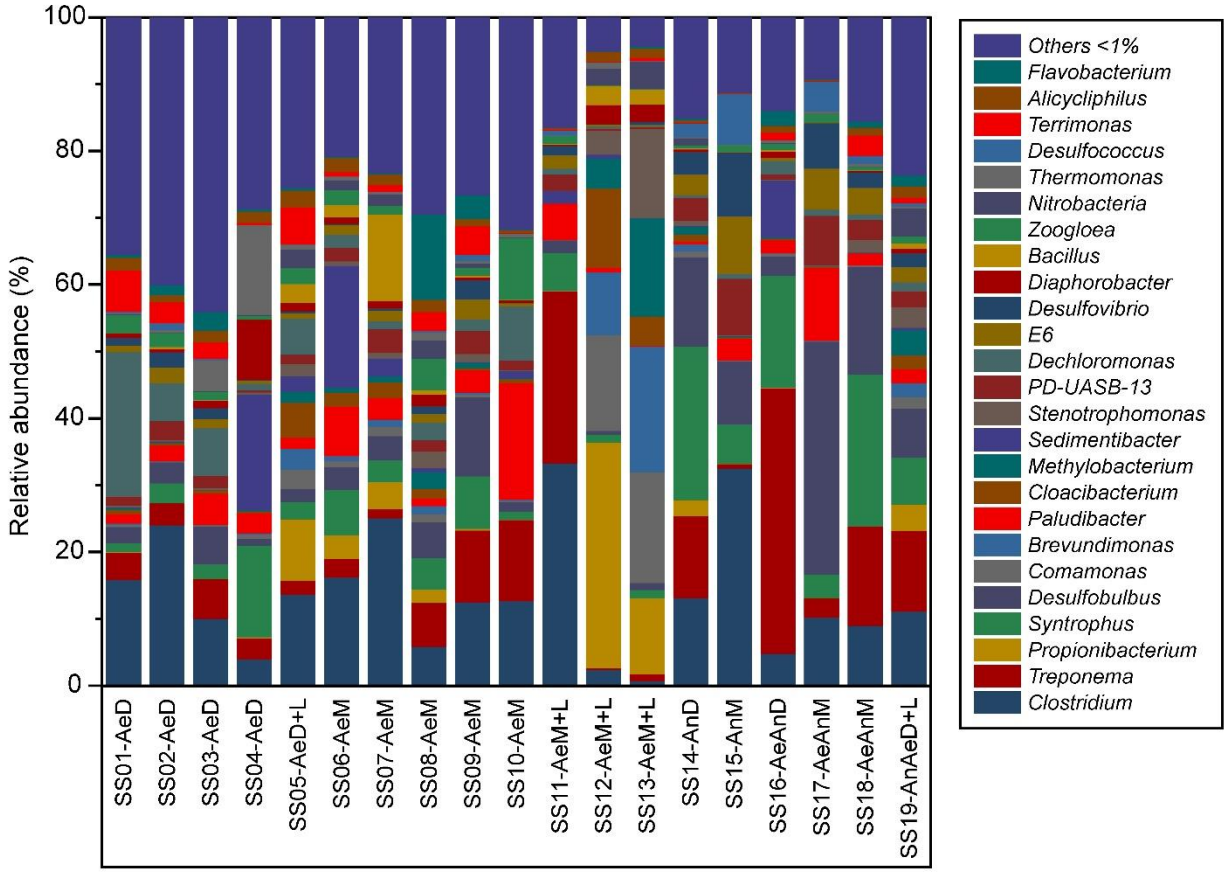
**Supplementary Figure S1.** Relative abundance of common genera to 19 sewage sludges from São Paulo State, Brazil. *Others = members with relative abundance lower than 1%.



**Supplementary Table 1.** Primers mix used in PCR reaction for the 16S rRNA gene sequencing.

| **Primers** | **Sequence 5' → 3'** |
|---|---|
| 16SV4FPCR1_1 F | 5'TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGAYTGGGYDTAAAGNG |
| 16SV4FPCR1_2 F | 5'TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGNAYTGGGYDTAAAGNG |
| 16SV4FPCR1_3 F | 5'TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGNNAYTGGGYDTAAAGNG |
| 16SV4FPCR1_4 F | 5'TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGNNNAYTGGGYDTAAAGNG |
| 16SV4RPCR1_1 R | 5'GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGCCGTCAATTCMTTTRAGT |
| 16SV4RPCR1_2 R | 5'GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGNCCGTCAATTCMTTTRAGT |
| 16SV4RPCR1_3 R | 5'GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGNNCCGTCAATTCMTTTRAGT |
| 16SV4RPCR1_4 R | 5'GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGNNNCCGTCAATTCMTTTRAGT |

**Supplementary Table 2.** Summary of the chemical attributes from 19 sewage sludges from São Paulo State, Brazil and their contribution (**λ**) to microbial community structures according redundancy analysis (RDA).

| **Attribute** | | **Range** | **Mean** | **Median** | **Lambda (λ)** | **$P_{value}$** |
|---|---|---|---|---|---|---|
| pH | | 6.5 - 13.1 | 8.4 | 8.0 | 0.11 | 0.002 |
| Fe | g $kg^{-1}$ | 4.4 - 86.8 | 27.4 | 21.6 | 0.07 | 0.002 |
| B | mg $kg^{-1}$ | 1.7 - 22.4 | 9.4 | 7.4 | 0.06 | 0.002 |
| Mg | g $kg^{-1}$ | 1.0 - 4.5 | 2.6 | 2.4 | 0.06 | 0.002 |
| Na | g $kg^{-1}$ | 0.1 – 1.6 | 0.8 | 0.6 | 0.05 | 0.002 |
| P | g $kg^{-1}$ | 7.6 - 20.5 | 12.7 | 11.9 | 0.04 | 0.002 |
| Ca | g $kg^{-1}$ | 7.2 - 142.9 | 30.5 | 13.8 | 0.04 | 0.002 |
| Ba | mg $kg^{-1}$ | 90 - 1082 | 471 | 411 | 0.04 | 0.002 |
| N-Kj | g $kg^{-1}$ | 17 - 61 | 42 | 40 | 0.04 | 0.002 |
| Cu | mg $kg^{-1}$ | 85 - 573 | 312 | 290 | 0.03 | 0.002 |
| Al | g $kg^{-1}$ | 5.5 - 48.5 | 15.9 | 15.9 | 0.03 | 0.002 |
| Ni | mg $kg^{-1}$ | 6.5 - 522.7 | 102.0 | 69.6 | 0.03 | 0.002 |
| Mn | mg $kg^{-1}$ | 133 - 449 | 218 | 201 | 0.03 | 0.004 |
| Zn | mg $kg^{-1}$ | 245 - 4592 | 1590 | 1309 | 0.02 | 0.002 |
| Cr | mg $kg^{-1}$ | 16 - 593 | 206 | 104 | 0.02 | 0.004 |
| $N\text{-}NH_4^+$ | mg $kg^{-1}$ | 20 - 335 | 126 | 122 | 0.02 | 0.010 |
| Mo | mg $kg^{-1}$ | 0.5 - 18.7 | 4.1 | 2.7 | 0.02 | 0.018 |
| K | g $kg^{-1}$ | 0.5 - 4.6 | 1.5 | 1.1 | 0.02 | 0.094 |
| $N\text{-}NO_2^-/NO_3^-$ | mg $kg^{-1}$ | 2.2 – 7.2 | 4.1 | 3.8 | 0.02 | 0.112 |
| S | g $kg^{-1}$ | 5.7 - 36.9 | 16.7 | 14.9 | 0.01 | 0.010 |
| Pb | mg $kg^{-1}$ | 16 - 119 | 41 | 33 | 0.01 | 0.010 |
| C/N | | 6.3 - 13.2 | 8.6 | 7.7 | 0.01 | 0.144 |
| Moisture | % | 56 - 87 | 74 | 75 | 0.01 | 0.450 |
| Hg | mg $kg^{-1}$ | 1.7 - 11.3 | 6.3 | 5.3 | 0.01 | 0.430 |
| Cd | mg $kg^{-1}$ | 0.2 - 6.9 | 2.7 | 2.6 | 0.01 | 0.700 |
| OC | g $kg^{-1}$ | 203 - 425 | 338 | 344 | < 0.01 | 0.212 |
| Se | mg $kg^{-1}$ | < LQ - 11.0 | 3.1 | 2.6 | < 0.01 | 0.226 |
| As | mg $kg^{-1}$ | 1.9 - 10.7 | 6.9 | 7.0 | < 0.01 | 0.624 |

**Supplementary Table 3.** Bacterial diversity indexes for 19 sewage sludges from São Paulo State, Brazil.

| Samples | Chao1 | Simpson (1-D) | Shannon-Wiener (H) |
|---|---|---|---|
| SS1 | 296 | 0.995 | 5.46 |
| SS2 | 242 | 0.993 | 5.26 |
| SS3 | 319 | 0.995 | 5.55 |
| SS4 | 318 | 0.995 | 5.48 |
| SS5 | 405 | 0.997 | 5.83 |
| SS6 | 393 | 0.997 | 5.81 |
| SS7 | 341 | 0.995 | 5.55 |
| SS8 | 433 | 0.997 | 5.87 |
| SS9 | 340 | 0.996 | 5.66 |
| SS10 | 303 | 0.995 | 5.40 |
| SS11 | 378 | 0.996 | 5.64 |
| SS12 | 367 | 0.996 | 5.63 |
| SS13 | 389 | 0.996 | 5.68 |
| SS14 | 515 | 0.997 | 5.97 |
| SS15 | 358 | 0.996 | 5.65 |
| SS16 | 368 | 0.996 | 5.70 |
| SS17 | 399 | 0.996 | 5.69 |
| SS18 | 339 | 0.996 | 5.60 |
| SS19 | 422 | 0.996 | 5.77 |