**Survey of glycerol dialkyl glycerol tetraethers (GDGTs) in Nevada and California hot springs and selected thermophiles**

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**ABSTRACT**

Glycerol dialkyl glycerol tetraethers (GDGTs) are core membrane lipids of many Archaea and some Bacteria. We examined the GDGT concentration in eight different hot springs from the Nevada and California deserts. Hot spring temperatures ranged from 31 to 95°C and pH values from 6.8 to 10.7. Parametric Pearson’s correlation coefficients between GDGTs and environmental parameters were calculated (Table 1). The values were calculated to identify significant correlations between GDGT profiles and environmental variables. 

**INTRODUCTION**

- Core membrane lipids of many Archaea and some Bacteria
- Occur ubiquitously in many sediment types
- GDGTs are membrane-spanning lipids (Weijers et al. 2006b)
- Two tenmembered rings
- Four ether bonds and two glycerol backbones
- Found only in archaea

**METHODS**

- **Sampling**
  - Great Boiling Spring
- **Culturing**
  - Salinibacterus brasiensis
- **Lipid Extraction**
  - Groundwater bacterial community

**RESULTS**

- Forty sediment samples were collected from eight different hot springs.
- Sampling sites had temperatures ranging from 31 to 95°C and pH values ranging from 6.8 to 10.7, including high-temperature geothermal sources, cooler samples in outflow channels, and cooler spring sources.
- Water samples were collected at each site and analyzed for temperature, pH, Ca, Cr, Cu, Fe, K, Mg, Mn, Na, Ni, Sr, Zn, F, Cl, NO₂, NO₃, PO₄, SO₄ and NH₄.

**DISCUSSION**

- **GDGTs in hot spring sediments**
  - Relationship between GDGTs and pH
  - Correlation between GDGTs and temperature
  - Correlation between GDGTs and environmental parameters

- **Statistical Analysis**
  - Pearson’s correlation coefficients
  - Spearman’s non-parametric correlation coefficients

**REFERENCES**


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**Table 1: Selected Pearson’s parametric and Spearman’s nonparametric correlations between lipid types and geochemical analytes.**

<table>
<thead>
<tr>
<th>Type</th>
<th>Temp</th>
<th>pH</th>
<th>NO₃ ppm</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>b + i</td>
<td>Total</td>
<td>.355</td>
<td>-.415</td>
<td>-.352</td>
</tr>
</tbody>
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