Differences in hydraulic conductance (Kh) as a function of leaf area (KS Leaf) and xylem size (KS Xylem) in Encelia californica and Venegasia carpesioides

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Southern California and the Santa Monica Mountains experience a climate similar to that of the Mediterranean basin. This means hot, dry summers, mild, wet winters, and large amounts of plant diversity. A major issue that can affect these regions is water availability and processing. To demonstrate this, hydraulic conductance (K) was measured as a function of leaf area (K_{SLeaf}) and xylem size (K_{sxylem}). Two vascular plants were used for this study, Encelia californica and Venegasia carpesioides. These plants were chosen to see the relationship in physiological changes from the LA basin and Hollywood hills to Ventura County and the Channel Islands. Much of the diversity in southern California is concentrated here.

But climate change is affecting the normal conditions for these regions and that diversity is shifting, both in type and physiology. A very important issue is shifting, both in type and physiology. A very important issue is that diversity is shifting, both in type and physiology. It was hypothesized that the larger plant (E. californica) will have a larger hydraulic conductance (K) as a function of leaf area (K_{SLeaf}) and xylem size (K_{sxylem}). Changes in water availability is playing a major role in this environmental and physiological change. The study will measure hydraulic conductance (K) that diversity is shifting, both in type and physiology. A very important issue is that diversity is shifting, both in type and physiology. It was hypothesized that the larger plant (E. californica) will have a larger hydraulic conductance (K) as a function of leaf area (K_{SLeaf}) and xylem size (K_{sxylem}). Changes in water availability is playing a major role in this environmental and physiological change.

RESULTS
Unpaired Means Comparison for t-test (Kh)
Grouping Variable: Category for t-test (Kh)
Hypothesized Difference = 0

<table>
<thead>
<tr>
<th>EC-Kh</th>
<th>VC-Kh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>Diff</td>
</tr>
<tr>
<td>1.5</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Unpaired Means Comparison for t-test (Ks xylem)
Grouping Variable: Category for t-test (Ks xylem)
Hypothesized Difference = 0

<table>
<thead>
<tr>
<th>EC-Ks xylem</th>
<th>VC-Ks xylem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>Variance</td>
</tr>
<tr>
<td>1.641</td>
<td>0.0004</td>
</tr>
</tbody>
</table>

The P-value, 0.2867, does not suggest a significant difference in internal morphology, which can go undetected, can affect physiology greatly. Additionally, a higher sample size can be accounted for in future research, as higher sample size will increase accuracy of the Student’s t-test. Past research on these subjects were scarce, proving our efforts and knowledge gained even more significant.

CONCLUSIONS
- These 2 species, although morphologically-similar, exhibit differences in hydraulic conductance.
- Leaf size seems to vary more widely in regards to hydraulic conductance.
- Water relations and availability have a large effect on plant physiology and viability.
- Other pursuits in this subject could include transpiration rates for Weld County.

WORK CITED


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