Extraction and Quantification of Hydrolyzable Tannins in Acorns from Different Species of Oak Trees (Quercus spp.)
Sarah E. Browning¹, Marshall E. Woodruff², Russell J. Franks¹*
¹Department of Chemistry & Biochemistry, ²Arthur Temple College of Forestry & Agriculture
Stephen F. Austin State University, Nacogdoches, TX

Results:
Hydrolyzable tannin structures:

- Gallotannin
- Ellagitannin

Results of acorn analysis:

<table>
<thead>
<tr>
<th>Oak Species</th>
<th>Total Phenolic Content (mg GAE¹ / g acorn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overcup Oak (Q. lyrata)</td>
<td>2.4 ± 0.3</td>
</tr>
<tr>
<td>Live Oak (Q. virginiana)</td>
<td>3.8 ± 0.8</td>
</tr>
<tr>
<td>Swamp Chestnut Oak (Q. michauxii)</td>
<td>4.9 ± 0.7</td>
</tr>
<tr>
<td>White Oak (Q. alba)</td>
<td>5.2 ± 0.5</td>
</tr>
<tr>
<td>Water Oak (Q. nigra)</td>
<td>5.6 ± 0.7</td>
</tr>
<tr>
<td>Shumard Oak (Q. shumardii)</td>
<td>6.3 ± 0.8</td>
</tr>
</tbody>
</table>

¹GAE = gallic acid equivalent

Conclusions:
- Results are comparable to those from analysis of acorn samples from Poland³
- ATCOFA researchers are testing dietary preferences of white-tailed deer for various acorns in collaboration with the USDA

Future Work:
- Determination of condensed tannin content in current acorn samples using the acid-butanol method
- Analysis of acorns from other varieties of Quercus

Acknowledgements:
- SFASU Dept. Of Chemistry & Biochemistry
- SFASU Arthur Temple College of Forestry and Agriculture
- SFASU Office of Research & Sponsored Programs
- Robert A. Welch Foundation (Grant #AN-0008)

References: