**Western Yarrow, Achillea millifolium**: He’ Hahee Se’ Otse: Engaging Very Young and Youth with its Ethnobotany, Cheyenne Traditional Medicine, and Western Culture

Science in a Botanical Garden

Tim Mulally, Liberal Studies, Montana State University (MSU)-Bozeman; MT; Meredith Tallbull, Linwood Tallbull, Chief Dull Knife College, Lame Deer, MT

Florence Dunkel, Plant Sciences and Plant Pathology, MSU-Bozeman

**Introduction.** The Cheyenne people of the Great Lakes are a people of great oral stories and timeless traditions. The Northern Cheyenne, known in Cheyenne either as **Notameohésêhese** meaning "Northern Eaters" or simply as **Ohmésêhese** meaning "Eaters", live in southeast Montana on the Northern Cheyenne Reservation. (Wikipedia)

**Hypothesis Tested:** Western Scientific knowledge can be combined with Traditional medicinal practices/knowledge, Cheyenne language, and history with an Ipad to engage young Cheyenne children in the traditional garden.

**Materials and Methods**

**In-depth interviews with:**
- Elder/Ethnobotanist, Linwood Tallbull (in Busby MT)
- Meredith Tallbull (via polycom at Chief Dull Knife College (CDKC), Lame Deer, MT)
- Josette Wooden Legs and Mina Seminole (in person at MSU and on polycom at CDKC Cheyenne Cultural Center).

**Peer-refereed literature search.** Thorough peer-refereed literature search in CAB Direct and other databases.

**Plant exploration.** Location of field dried florescences and sampling of mid-winter, fresh green leaves; testing of bitter notes in leaves.

**Table 1. Peer Refereed Search for Information**

<table>
<thead>
<tr>
<th>Data Base</th>
<th>Key Words</th>
<th>Hits found/used</th>
</tr>
</thead>
<tbody>
<tr>
<td>CabDirect</td>
<td>yarrow</td>
<td>403/25</td>
</tr>
<tr>
<td></td>
<td><em>Achillea</em></td>
<td>201/15</td>
</tr>
<tr>
<td></td>
<td><em>millifolium</em></td>
<td></td>
</tr>
<tr>
<td>Agricola</td>
<td>yarrow</td>
<td>406/4</td>
</tr>
<tr>
<td></td>
<td><em>Achillea</em></td>
<td>201/15</td>
</tr>
<tr>
<td></td>
<td><em>millifolium</em></td>
<td></td>
</tr>
</tbody>
</table>

**Results and Discussion.** Western science literature searches indicated yarrow essential oil may be useful in many areas, such as, the food industry to produce disinfectants and sanitizers from natural products (Jadhav et al. 2013). Used world-wide, yarrow has been documented by 76 Native American tribes for 377 distinct medicinal uses (Moerman 1998). Taking information we obtained and combined with that which the Northern Cheyenne people already possess, will help make the botanical garden a stepping stone to establish appreciation of traditional Northern Cheyenne ways, particularly related to plants. A good way to start that off is to get younger children involved. They are the future. This process doesn’t happen in a short time, yet it is a process that will help shape the minds into living healthily. The garden can help the tribe understand where their traditional food and medicine, and ceremonial plants come from, how the food or medicine is grown, and how it is prepared. In addition, yarrow may provide opportunities for local cottage industries.

**Table 1. Documented examples of bioactivity and ethnobotanical uses of yarrow**

<table>
<thead>
<tr>
<th>Western Science</th>
<th>Alternative Medicine</th>
<th>Northern Cheyenne</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective antimicrobial vs. Staphylococcus aureus (Tajik et al. 2008) and Listeria (Jadhav et al. 2013)</td>
<td>Prevention of infections (Rohloff 2000)</td>
<td>Fish preservative (antimicrobial) [<a href="http://WWW.herbvideos.com">WWW.herbvideos.com</a>]</td>
</tr>
<tr>
<td>Significantly reduces collagen deposition and fibroblast / myofibroblast proliferation in lung tissue due to bleomycin (Henniti et al. 2011)</td>
<td>Insect repellent (Rohloff 2000)</td>
<td>Mosquito repellent (L. Tallbull 2013)</td>
</tr>
<tr>
<td>Not yet verified in vivo or in vitro with a Western science process</td>
<td>Chewed to anesthetize toothaches (Militch 1990)</td>
<td>Reduce itching or on laceration to reduce pain (L. Tallbull 2013)</td>
</tr>
</tbody>
</table>

**Recommendations**

- Use electronic media to help introduce material visually in an informative way.
- Provide information to Josette Woodenlegs to digitize and add Cheyenne speakers Elders telling stories in Cheyenne.
- Then Meredith Tallbull can use information in an instructional way with Ipad, Android tablets when working with young children and youth in the botanical garden.

**Literature Cited**


Chief Dull Knife College. 2008. We the Northern Cheyenne People


**Acknowledgements**

Thanks to Meredith Tallbull for the wisdom and insight about his Western knowledge approach. Thanks to Linwood Tallbull for his help with discovery learning process at botanical garden and returned to use in Northern Cheyenne’s peoples lives?

3.What is the next step towards the end goal, healthy life?