



Western Yarrow, *Achillea millefolium* He' Haehe Seeo' Otse: Engaging Very Young and Youth with its Ethnobotany, Cheyenne Traditional Medicine, and Western Culture Science in a Botanical Garden



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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 **Notameohmésêhese** 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

Data Base	Key Words	Hits found/used
CabDirect	•yarrow • <i>Achillea millefolium</i>	403/25
Agricola	•yarrow • <i>Achillea millefolium</i>	201/15
Biological Abstracts	medicinal uses of yarrow	406/4

In-depth interview Questions:

1. How can Northern Cheyenne produce the resources to achieve their desired way of life?
2. How can yarrow be incorporated into 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?



Fig. 1 Meredith Tallbull, Northern Cheyenne tribal member, CDKC student, founder and manager of the Northern Cheyenne Botanical Gardens



Fig. 2 Yarrow Plant



Fig. 3 Pond at the Botanical Garden Site, center of town, Lame Deer, MT.



Fig. 4 AGSC 465R students, Tim Mulally, Alan Balen, Emma Kashian; Teaching Assistant Casey Dennis; visiting with Northern Cheyenne Josette Woodenlegs, Mina Seminole, and Hunter Barrus.



Fig. 5 Tim and Alan learning from Northern Cheyenne Ethnobotanist, Linwood Tallbull about yarrow, and yucca.

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 healthier. 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

Western Science	Alternative Medicine	Northern Cheyenne
Effective antimicrobial vs. <i>Staphylococcus aureus</i> (Tajik et al. 2008) and <i>Listeria</i> (Jadhav et al. 2013)	Prevention of infections (Rohloff 2000)	Fish preservative (antimicrobial) WWW.herbvideos.com
Significantly reduces collagen deposition and fibroblast / myofibroblast proliferation in lung tissue due to bleomycin (Hemmti et al. 2011)	Insect repellent (Rohloff 2000)	Mosquito repellent (L. Tallbull 2013)
Topical application accelerated wound healing (Temamogullari et al. 2009)	Treatment of wounds (Rohloff 2000)	Wound healing and blood coagulant (L. Tallbull 2013)
Not yet verified in vivo or in vitro with a Western science process	Chewed to anesthetize toothaches (Mitich 1990)	Reduce itching or on laceration to reduce pain (L. Tallbull 2013)

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

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