



ELDERBERRY

FERMENTATION FEST 2023

CHRISTOPHER J. PATTON MA, MBA

**[HTTPS://GROW.MIDWEST-
ELDERBERRY.COOP/PRESENTATIONS.HTML](https://grow.midwest-elderberry.coop/presentations.html)**

INTRODUCTION



- ◆ “Fermentation covers a multitude of sins.” - Food Safety Scientist
- ◆ 5,000 yr. old beer jar with live yeasts in it - Israeli archaeologists
- ◆ First profession - interaction of environment, food systems and human cultures over 1,000s yrs.
- ◆ Human impact on climate the greatest it has ever been.





ENVIRONMENTAL BENEFITS

- ◆ Extensive shallow root system, Soil retention - erosion control
 - ◆ Rapid annual growth from 5-10 ft. annually
 - ◆ Supports 60+ native pollinators, wildlife habitat
 - ◆ Thrives best in full sun or partial shade
 - ◆ On berms in low wet areas, along ponds
 - ◆ Forest / field borders, windbreaks, irregular islands or contours
 - ◆ Secondary soils - sunny slope, rocky, sandy
-

ELDERFLOWER OPTIONS



- ◆ Fresh or dried to make a sugar based syrup
 - ◆ Wine, ciders, liqueurs...
 - ◆ Dried used like hops
 - ◆ Dried for infusions
 - ◆ Hydrosols for health applications
-

ELDERBERRY OPTIONS



- ◆ Your mother was a hamster and your father smelt of elderberries.
-Monty Python
- ◆ Mead, brandy, switchel, kombucha
- ◆ Blend with other fruits, grapes
- ◆ Make ales, sours, lemonade
- ◆ Juice as a mixer: 2 oz./quart
- ◆ Vinegars, sauces, dressings, glazes

WILD VS CULTIVATED

“...wild elderberry have the lowest quantities of these bioactive compounds...” *Bioactive properties of Sambucus nigra L. as a functional ingredient for food and pharmaceutical industry, Karolina Młynarczyk, Dorota Walkowiak-Tomczak* *Poznan University of Life Sciences, Institute of Food Technology of Plant Origin, ul. Wojska Polskiego 31, 60-624 Poznan, Poland*
[Point #14: <https://midwest-elderberry.coop/health-nutrition/functional-ingredient.html>]

PRIMARY PROPERTIES

- ◆ **Most commonly known as antiviral herb, which was the subject of early clinical research on colds, flu, coughs and other respiratory issues**
 - ◆ **More recently, elderberry's anti-inflammatory potential has attracted more research grants.**
 - ◆ **Direct and indirect anti-inflammatory effects: joints, muscles, brain**
 - ◆ **Nutritionally dense, deep berry color with a sweet neutral flavor**
 - ◆ **Gland stimulation, digestion, pancreas - hypoglycemia, type 2 diabetes**
 - ◆ **Antibacterial qualities**
-

NUTRIENTS

- ◆ European *S. nigra* has 4 different antioxidants
 - ◆ North American *S. canadensis* has 7 identified antioxidants
 - ◆ Same 4 as *S. nigra* with 3 additional ones
 - ◆ *S. n.* and *S. c.* levels of antioxidants considered roughly equal
 - ◆ Anthocyanins, flavonoids, and other polyphenolics, amino acids
 - ◆ Anti-inflammatory flavonoids Quercetin & Rutin (glycoside version)
 - ◆ Relatively high in Vitamins A, C, & B6 - minerals K, Ca, P and Fe (USDA chart)
 - ◆ <http://nutritiondata.self.com/facts/fruits-and-fruit-juices/1883/2>
-

NATURE'S MEDICINE CHEST

- ◆ Hippocrates wrote a book on elderberry's uses
 - ◆ Proceedings of the First International Symposium on Elderberry
<http://www.actahort.org/books/1061/>
 - ◆ Held at the University of Missouri, Columbia in June 2013
 - ◆ About 53 papers from 17 nations
 - ◆ Elderberry cultivation and clinical health research
 - ◆ All parts of the plant, berries and flowers studied
 - ◆ All major researchers and producers present
-

OF INTEREST

- ◆ **Ukrainian research on using leaf extracts to repair DNA damaged from radiation like Chernobyl**
 - ◆ **Elderflower seems a little more potent in treating allergies**
 - ◆ **Anti-inflammatory research supported preventative practices, such as consuming a tablespoon of elderberry juice/day**
 - ◆ **Compromised immune systems helped - asthma, allergies, bronchitis, congestion, perhaps some cancers, chemo side-effects, skin problems**
 - ◆ **“Elderberry is a potent sedative and helps induce sleep. It helps relax your nerves and muscles and imparts a feeling of well-being.”**
(<http://www.home-remedies-for-you.com/articles/Elderberry-juice.html>)
-

ANTIVIRAL NOTES

- ◆ Elderberry is best known to the public for fighting flu and colds
 - ◆ Seems to work on every virus due to its capacity to inhibit or prevent the reproduction of viruses.
 - ◆ Much of early antiviral research used and was funded by Sambucol
 - ◆ Jerusalem Zoo chimps & prevention against unknown infection
 - ◆ Israeli and Norwegian studies on those already ill
 - ◆ Potential use against exotic viruses, pets & animal husbandry
 - ◆ MEC website as a resource:
(<http://minnesota-elderberry.coop/health--nutrition/index.html>)
-

HEALING REPAIR

- ♦ **How antiviral properties strengthen the immune system - the advantage of systemic energy in prevention**
 - ♦ **Indirect & direct anti-inflammatory effects may imply similarly active benefits in other biological system balancing.**
 - ♦ **High levels of antioxidants promote gum health, circulatory system health, quicker muscle recovery from exercise**
 - ♦ **Used to reduce side effects experienced with various treatments**
 - ♦ **Secondary health support to other prescribed medical treatments**
 - ♦ **“In order to derive maximum elderberry benefits, the best thing is to drink fresh juice of the elderberry fruits. “**
(<http://www.home-remedies-for-you.com/articles/Elderberry-juice.html>)
-

INGREDIENT POTENTIAL

- ◆ **Relative variability of elderberry nutrient, antioxidant, sweetness, acidity, fiber, color profiles by cultivar and location only partly known.**
 - ◆ **Large existing market for freeze dried powders, extracts and concentrates - Europe**
 - ◆ **Identification of desired ingredients**
 - ◆ **Food & beverage specific raw material: colorant, seed oil and/or antioxidant**
 - ◆ **Medical catalysts and active agents**
 - ◆ **Quality control of harvest: field and cultivar, documentation of harvest**
 - ◆ **Different quality grades and pricing linked to customer's purpose**
 - ◆ **Cultivar selection for defined/desired biochemical qualities**
 - ◆ **Elderberry processing by-product marketing: people and animals**
-

NUTRACEUTICAL FOOD

- ◆ **Anti-inflammatory benefits key to growing year-round consumption**
 - ◆ **Elderberry juice is a tasty, colorful, sweet neutral, nutrient-dense flavor easily added to food and beverages: mix @ 2 oz/quart or 1 tbs/glass**
 - ◆ **Most US products use European CONCENTRATE (heated for 3 days) vs. cool processed juice (5 min @ 180°F) - taste, nutritional advantages**
 - ◆ **Flower & berry cordials, extracts, teas, infusions, jellies, jams & spreads**
 - ◆ **Wine, mead, brewed beer & vinegars, liquors, kombucha**
 - ◆ **Food/beverage coloring: tasty nutritious fun with a purplish passion!**
-

DEVELOPMENT PARTNERSHIPS

- ◆ A growers cooperative can better coordinate with multiple partners
 - ◆ Quality control and identification, ingredient spec development
 - ◆ Support & encourage continuing academic research
 - ◆ Harvest aggregation, sorting and commercial volume commitments
 - ◆ Cooperation, tracking from field to customer to consumer
 - ◆ Better able to make and maintain make long term supply agreements
 - ◆ Participate in / distribute to larger markets - national, global
 - ◆ “Purple Berry” designation
-