2nd International Agrobiodiversity Congress

CYNARA CARDUNCULUS GENOTYPES COMPARISON FOR FOOD AND INDUSTRY BIOACTIVE MOLECULES RECOVERY

Sustainable exploitation of *Cynara* spp. biodiversity for food and no-food sector improvement

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Cynara cardunculus (**globe artichoke and cardoon**) is grown for edible capitula and biomass for industrial use. These crops are a rich source of **polyphenols**, secondary metabolites with antioxidant activity.
Italy has a large germplasm that could be sustainably exploited to improve food and no-food sector.

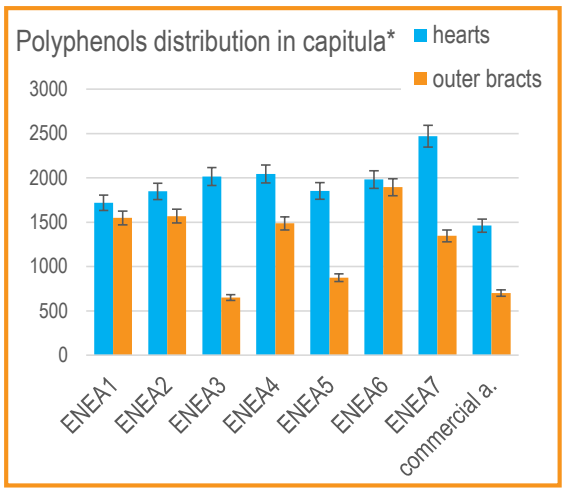
ENEA developed a breeding program of globe artichoke and cultivated cardoon.
Capitula of new genotypes have been chemically characterized in order to determine:

- **total polyphenols**
- **antioxidant activity**
- **polyphenols profile**

Compared to a commercial artichoke, **improved genotypes** showed **higher** total polyphenol content and, in some cases, higher antioxidant activity. Globe artichoke genotypes were rich in **phenolic acids**, while the cardoon ones in **flavonoids** (HPLC data not showed).

capitula = hearts + outer bracts

Genotype	Total polyphenol *	Antioxidant activity**
ENEA 1	3267,1 ± 81,7	5407,2 ± 135,2
ENEA 2	3416,6 ± 85,4	8011 ± 200,3
ENEA 3	2667,3 ± 66,7	3282,7 ± 16,2
ENEA 4	3532,8 ± 88,3	5083,3 ± 38,8
ENEA 5	2727,4 ± 68,2	6885,8 ± 39,8
ENEA 6	3875,9 ± 96,9	5883,8 ± 74,0
ENEA 7	3875,9 ± 96,9	5716,0 ± 62,5
commercial artichoke	2161,6 ± 54,0	5921,8 ± 148,1



*mg gallic acid eq/100 g DW

**µmol Trolox eq/100 g DW (DPPH assay)

Research Contributions to the Congress

- ✓ Agrobiodiversity is very important for a resilient, sustainable and nutritious food system, so it must be preserved and improved through a rational exploitation.
- ✓ Development of new *Cynara* spp. genotypes contributes to biodiversity conservation.
- ✓ Valorization and exploitation of ENEA improved genotypes, rich in polyphenols, could lead beneficials on healthy diet and on farmer's income.
- ✓ Valorization of waste (outer bracts) as source of bioactive molecules, could incentivate a positive food system transformation, by a circular bioeconomy approch.

ENEA
Italian national agency for new technologies, energy and sustainable economic development