



# Antioxidant and enzyme inhibiting properties of extracts of *in vitro* grown *Nepeta cyrenaica* Quézel & Zaffran (Lamiaceae)



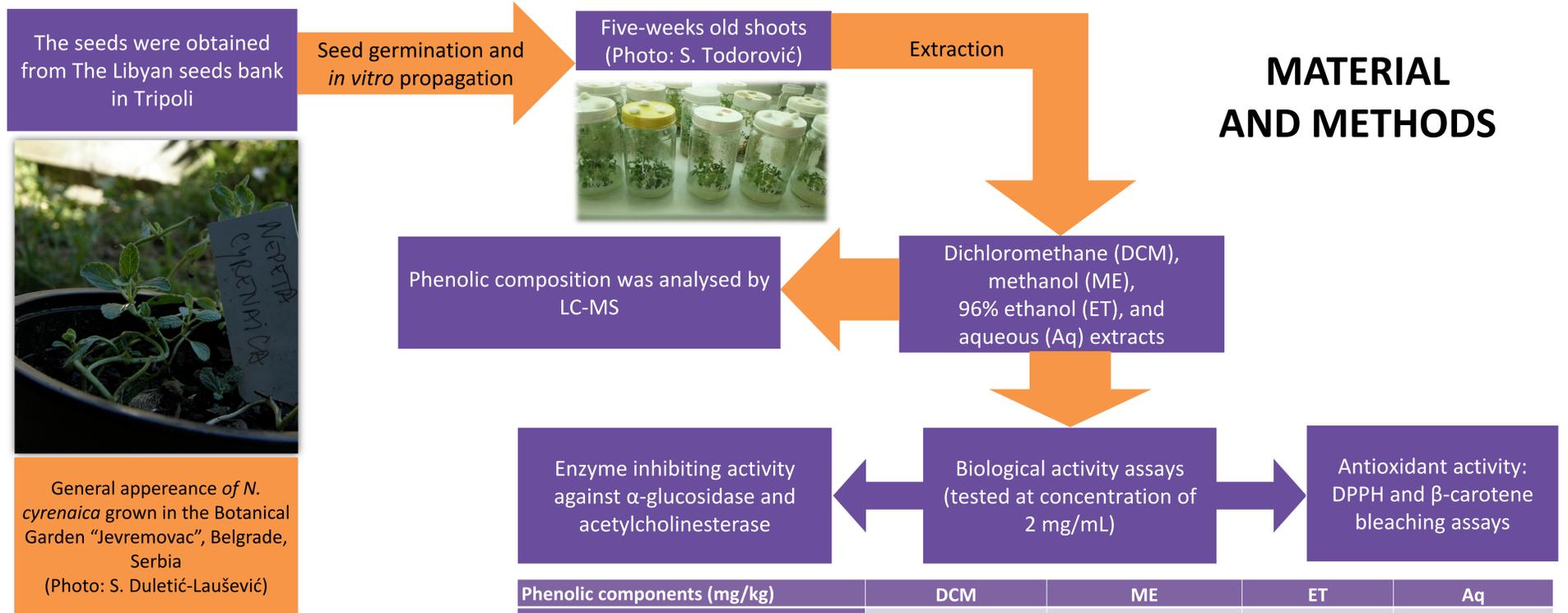
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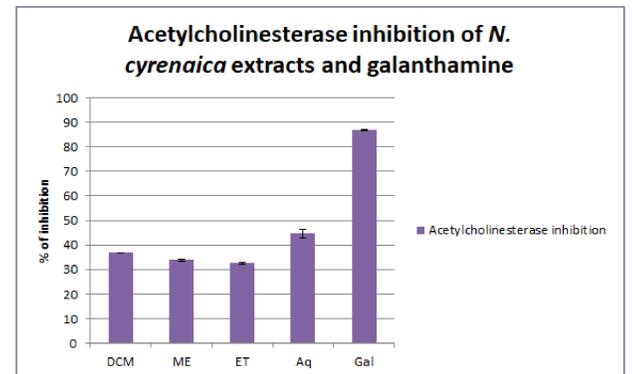
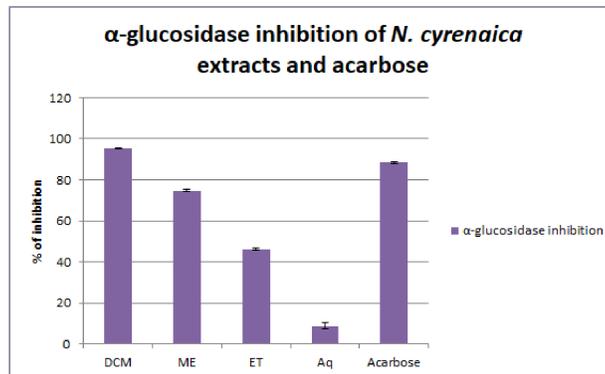
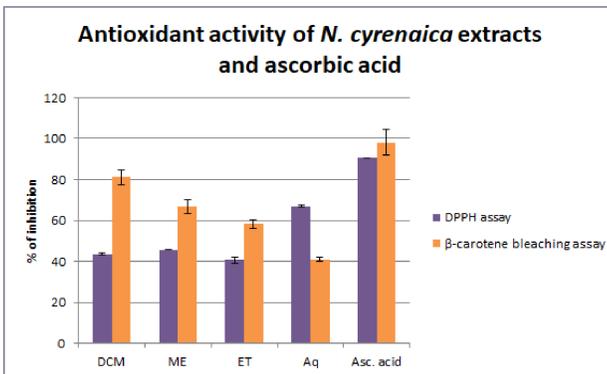
- ❖ *Nepeta cyrenaica* Quézel & Zaffran (Lamiaceae) is an endemic species of Libyan flora.
- ❖ In this study, the extracts prepared from *in vitro* propagated *N. cyrenaica* are characterized for the first time for its phenolic composition, antioxidant and enzyme inhibiting effects.



## RESULTS

- ❖ The methanol extract contained the highest amount of phenolic components, especially ferulic and rosmarinic acids, and epigallocatechin gallate.

| Phenolic components (mg/kg) | DCM       | ME             | ET     | Aq        |
|-----------------------------|-----------|----------------|--------|-----------|
| <b>PHENOLIC ACIDS</b>       |           |                |        |           |
| Quinic acid                 | 1.85      | 8.16           | 5.34   | 14.16     |
| Chlorogenic acid            | 3.71      | 9.92           | 8.91   | 8.06      |
| Caffeic acid                | 2.01      | 29.67          | 27.29  | 39.11     |
| Ferulic acid                | 57.54     | <b>1300.73</b> | 806.03 | 965.81    |
| Rosmarinic acid             | 36.91     | <b>528.88</b>  | 503.35 | 311.23    |
| <b>FLAVONOIDS</b>           |           |                |        |           |
| Apigenin                    | not found | not found      | 1.73   | not found |
| Epigallocatechin gallate    | 67.41     | <b>719.05</b>  | 641.98 | 514.13    |
| Naringenin                  | not found | not found      | 4.74   | not found |
| Cirsimaritin                | 428.78    | 98.08          | 144.09 | 6.94      |
| Aesculetin                  | 2.66      | 19.73          | 19.14  | 28.35     |

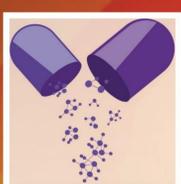


- ❖ The **aqueous extract** showed stronger activity in DPPH and acetylcholinesterase inhibition assays than other tested extracts, although its effects were lower compared to positive controls.
- ❖ The **dichloromethane extract** possessed stronger antioxidant effects in the  $\beta$ -carotene bleaching assay than the other tested extracts, while its  $\alpha$ -glucosidase inhibition capacity was higher compared to acarbose.
- ❖ Although methanol extract contained the highest amount of polyphenolics, dichloromethane and aqueous extracts were shown to be more suitable for the extraction of bioactive components.

## CONCLUSION

The endemic *N. cyrenaica* could be efficiently propagated through *in vitro* propagation protocols as polyphenolic-rich plant with valuable medicinal potential.

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