FOOD SOURCES AND EMERGING METHODS TO OBTAIN ELLAGIC ACID

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INTRODUCTION

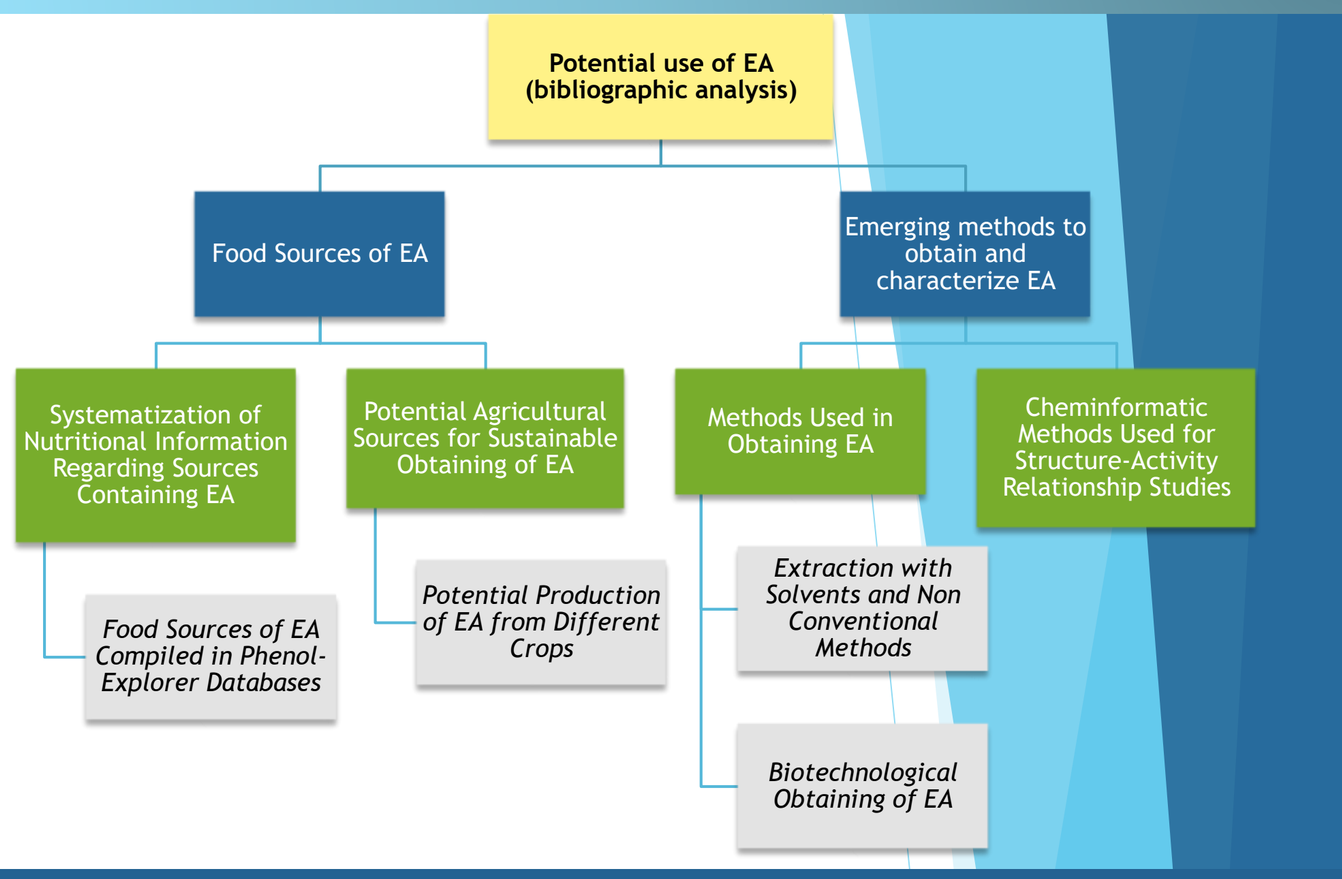
The development of new food and supplements has influenced the design and marketing of new products containing ellagic acid (EA).

EA has been marketed as a dietary supplement with a number of benefits against cancer, heart diseases and other diseases.

The anti-carcinogenic properties of EA have attracted increasing attention globally. EA has also been considered an important antioxidant.

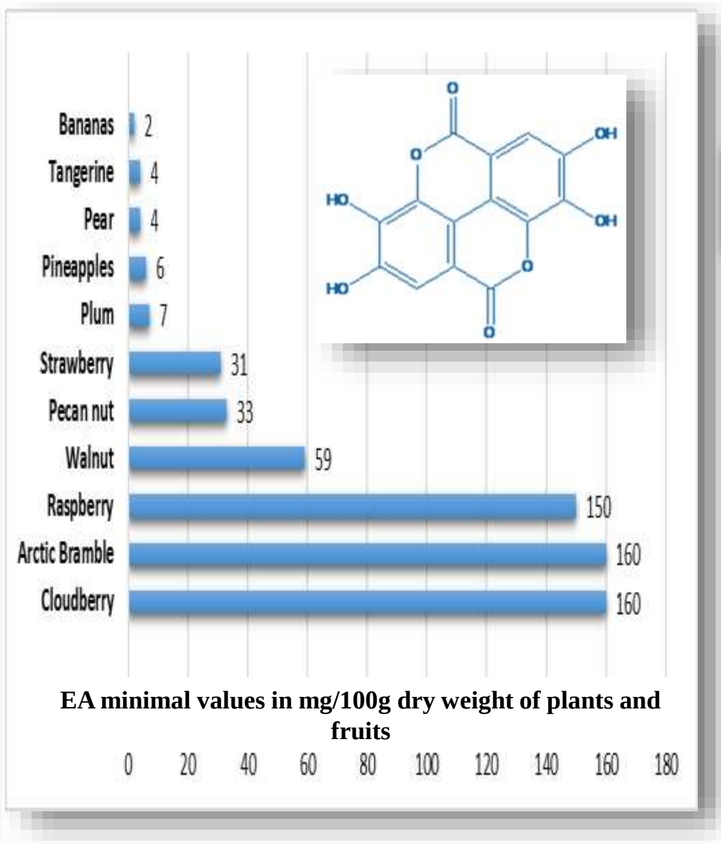
The aim of the present study is focused on the main dietary sources of EA that have been compiled so far in food composition databases (FCDB). These food sources were analysed from the perspective of the health benefits and the potential of agricultural production. Development and use of modern biotech and cheminformatic methodologies for characterization of biological structure-activity relationship are also addressed.

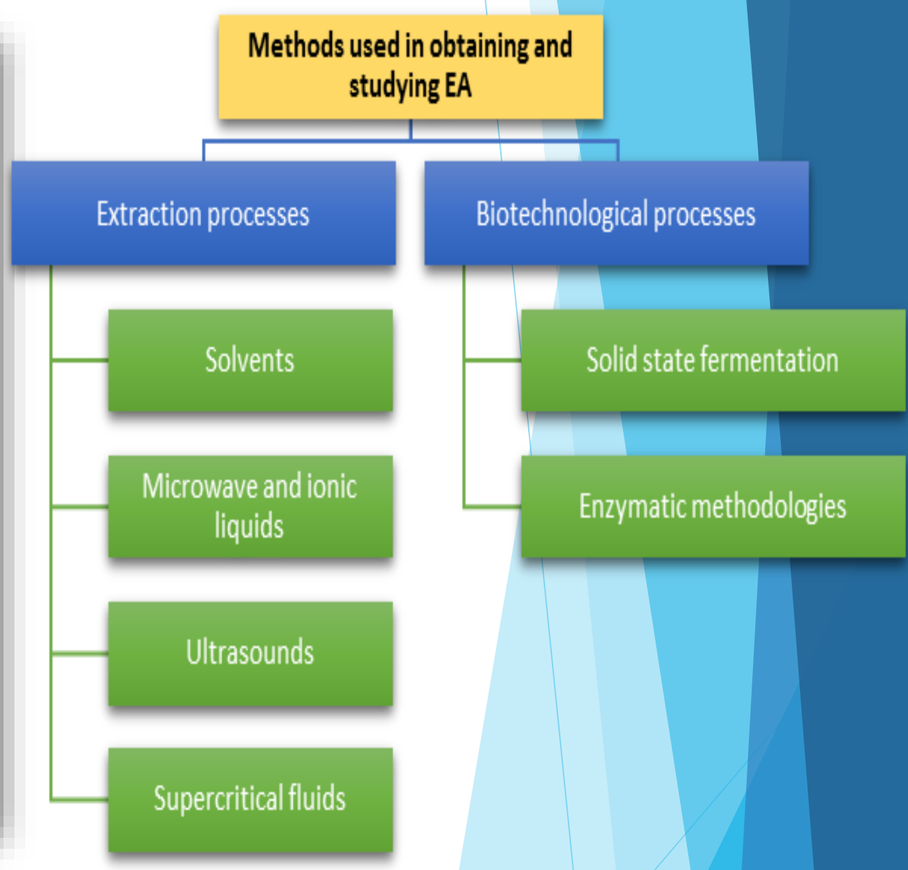
METHODS



RESULTS

Phenol Explorer Database		
Family *specie* -vernacular name	Food classification	EA mean content (mg/100 g)
Fagaceae		
Castanea P. Mill - Chestnut	Seeds - Nuts	735.44
Juglandaceae		
Juglans ailanthifolia Carr. -*Japanese Walnut*	Seeds - Nuts	15.67
J. regia L. - Walnut	Seeds - Nuts	28.50
J. regia L. - dehulled Walnut	Seeds - Nuts	5.90
J. regia L. - Walnut	Alcoholic beverages (Liquor)	1.22
Quercus sp. - Oak	Alcoholic beverages (Brandy)	1.13
Quercus sp. - Oak	Alcoholic beverages (Rum)	0.21
Quercus sp. - Oak	Alcoholic beverages (Scotch whisky, Rum)	0.82
Lythraceae		
Punica granatum L.-Pomegranate	Fruit (from juice concentrate)	17.28 9.13*
Punica granatum L.-Pomegranate	Fruit (pure juice)	2.06 3.97 *
Rosaceae		
Fragaria spp - Strawberry	Fruit (raw)	1.24
Fragaria spp - Strawberry	Fruit (raw)	2.85*
Rubus sp. - Blackberry	Fruit	43.67
R. chamaemorus L. - Cloudberry	Fruit	15.30
R. idaeus L. - Red raspberry	Fruit (jam)	1.14
R. idaeus L. - Red raspberry	Fruit (jam)	0.08**
R. idaeus L. - Red raspberry	Fruit (jam)	0.13***
R. idaeus L. - Red raspberry	Fruit (jam)	1.00****
R. idaeus L. - Red raspberry	Fruit (pure juice)	0.84
R. idaeus L. - Red raspberry	Fruit (raw)	2.12
R. idaeus L. - Red raspberry	Fruit (raw)	0.20**
R. idaeus L. - Red raspberry	Fruit (raw)	0.36***
R. idaeus L. - Red raspberry	Fruit (raw)	2.27**
Vitaceae		
Vitis rotundifolia Michx -Muscadine grape (Black)	Non-alcoholic beverages	0.90
Vitis rotundifolia Michx. - Muscadine grape (Green)	Non-alcoholic beverages	0.93





CONCLUSIONS

New chemical technologies for EA obtaining and industrial scale are conditioned to the development of new methods and biotechnology.

The generation of sustainable technological alternatives is necessary.

The database information collected here can help in a future sustainable agricultural development of potentially rich EA crops, controlling genetic, biotic and abiotic factors that influence their content.

Many fruits have higher concentrations of antioxidants found in the bark, seeds and pulp residues, which are by products of industrialization thereof. These elements show the wide possibilities that arise in the future for commercial production of EA.

Epidemiological studies that linked higher intake of polyphenols and EA are required.

To meet these challenges the use of bioinformatics and *in silico* studies is truly important. *In vivo* and *in vitro* studies are starting points and sources of valuable information to consider the introduction of *in silico* methods, such as QSAR, in Food Sciences.

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