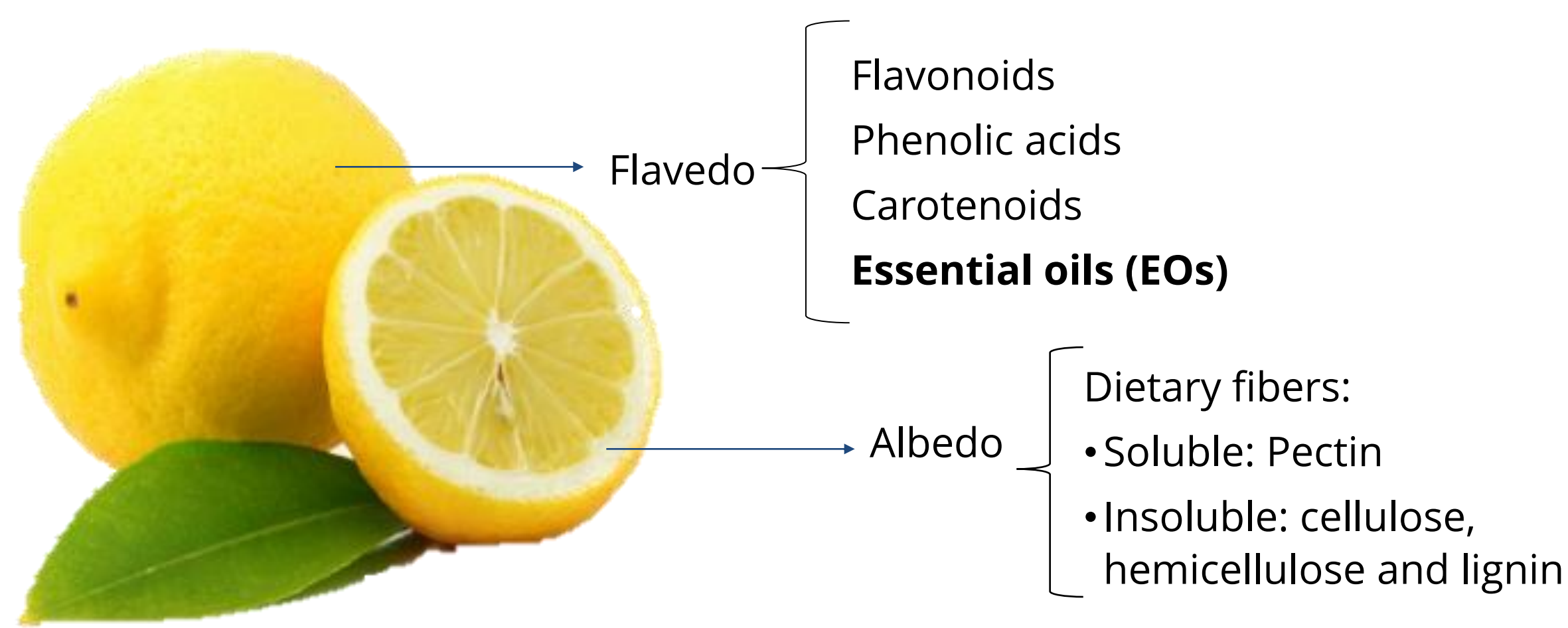


## Introduction

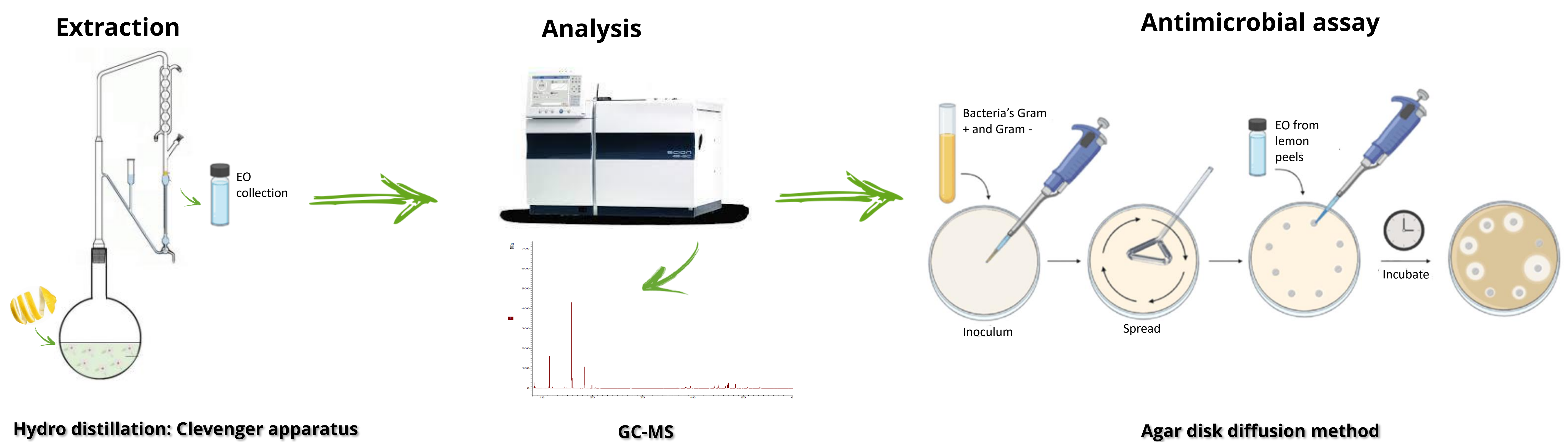


Citrus is the most abundant crop of fruit trees in the world, with an annual production of approximately 124.2 million tons. Lemons and limes are responsible for 15.9 million tons [1]. Processing of citrus fruits results in a significant amount of waste (peels, pulps and seeds), which represent about 50% of the raw processed fruits. *Citrus limon* peels are composed by relevant amounts of bioactive compounds, including essential oils (EOs). The recovery of the EO from lemon peels (LP), which are normally discarded as a waste in the environment, can be explored to produce new functional ingredients with preservative properties, also desirable from a circular economy perspective [2]. In the last few decades, chemical and synthetic preservatives have been widely used to conserve the quality and extend the shelf life of food products. However, these chemical preservatives can have negative effects on food safety due to their carcinogenic and teratogenic effects or residual toxicity. Therefore, natural compounds must be adopted to ensure the freshness and quality of the foods and EOs are among those natural compounds that are used nowadays to prolong the shelf-life of food products, because they show strong antioxidant and antimicrobial activity, inhibit the growth of some bacteria, and prevent food spoilage [3].

## Objectives

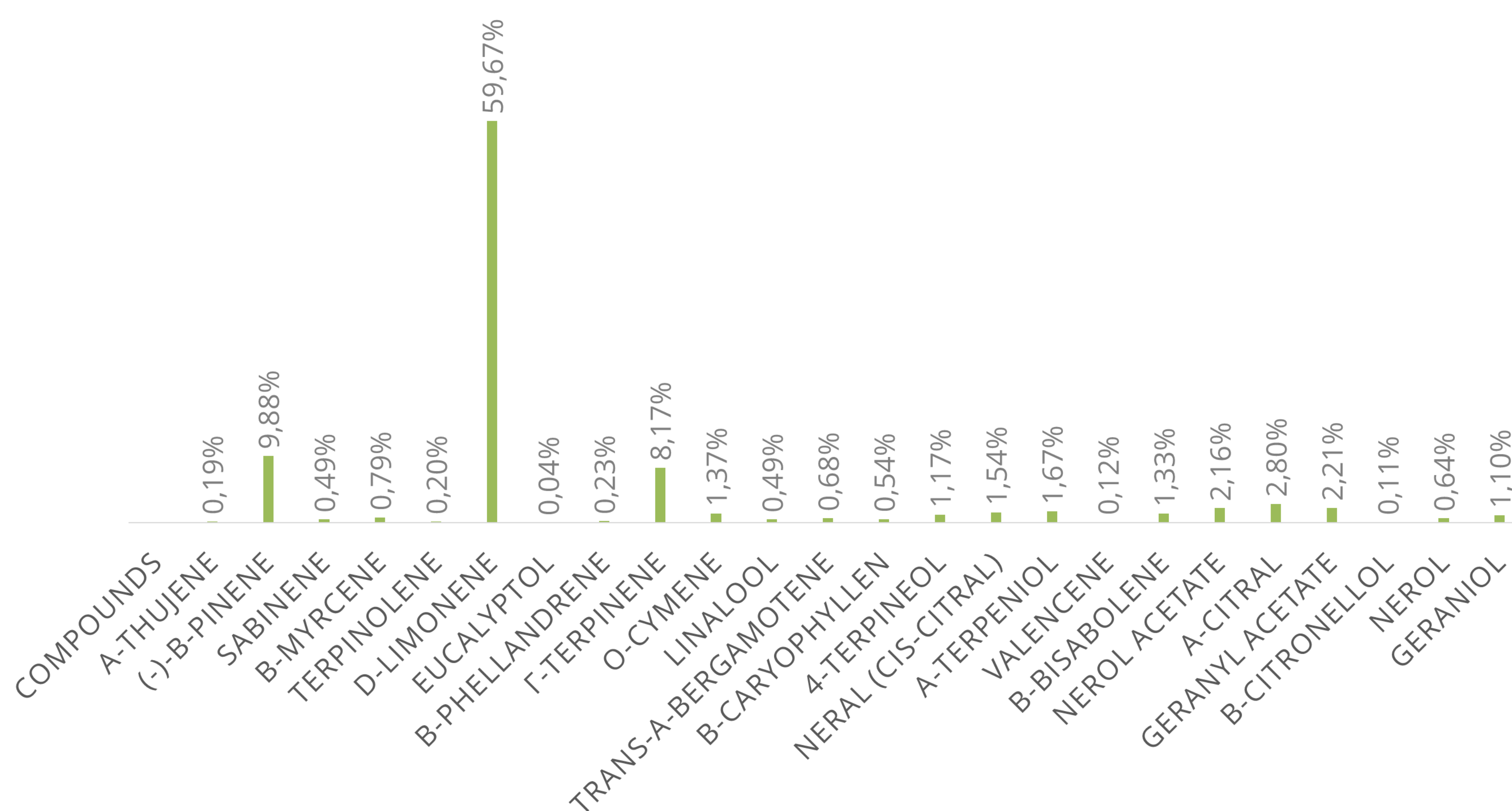
The aim of this work was understanding the preservative potential of EO from lemon peels: identification of aromatic/volatile compounds by GC-MS and antimicrobial activity by agar disk diffusion method

## Methodology



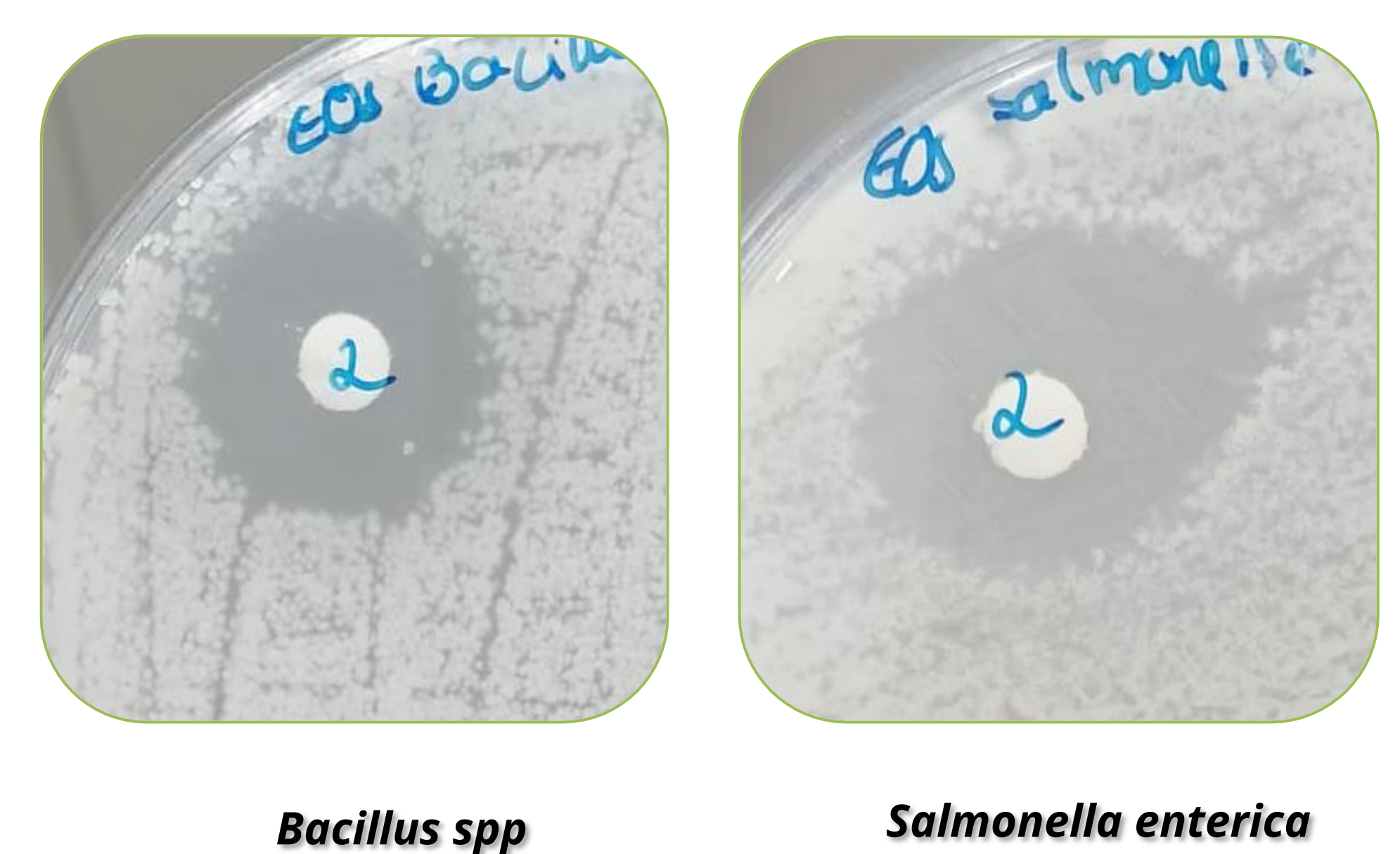
## Results and Discussion

### Identification of volatile compounds of EOs from lemon peels



- The results by GC-MS showed the presence of 24 compounds representing approximately 98% of the total compounds. The compound D-limonene is the major constituent of lemon peels EOs representing 59%, followed by (-)-β-pinene representing 9.88% and γ-terpinene representing 8.17%.

### Antimicrobial activity



- The disc diffusion method were performed to study antimicrobial activity of EO from lemon peels. The results of diffusion method indicated that EO of lemon peels had good inhibition capacity against the growth of *Bacillus spp* (20 mm) and *Salmonella enterica* (23 mm).

## Conclusions

According to these results, it can be concluded that lemon peels by-products, contain interesting aromatic compounds with a good antimicrobial potential, justifying their valorisation in different food applications with a good preservative potential.

## Acknowledgements

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