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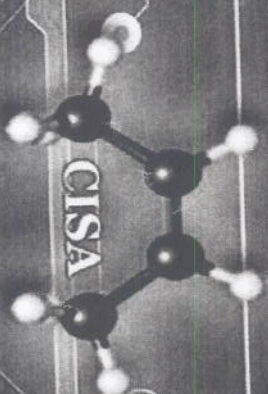
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BOOK OF ABSTRACTS



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ASSESSMENT OF ANTIOXIDANT ACTIVITY FOR
LEVISTICUM OFFICINALE EXTRACTS BY
SUPERCRITICAL FLUIDS EXTRACTION

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ABSTRACT

The *Levisticum officinale* (lovage) is known not only for its taste, characteristic aroma note and flavour, but also for its antioxidant effects. The traditional use of lovage in different diseases has been reported due to therapeutic activity of the chemical compounds. The present study investigates the antioxidant activity of the free radical scavenging and antimicrobial activity of supercritical carbon dioxide extracts from lovage leaves. The supercritical carbon dioxide extraction included variation of pressures (200 - 450 bar), temperatures (50-60°C), time of extraction (1-4 hours) and two separation stages was evaluated. The total polyphenols content was determined by Folin-Ciocalteu procedure; the tannic acid equivalent values ranged from 30,2501 ± 8,51628 mg / 100 g lovage leaves (separation 1), to the higher value 46,3581 mg / 100 g lovage leaves (separation 2). A good correlation was found between the DPPH free radical scavenging activity and the total flavonoids concentrations. The antimicrobial activities of the extracts of those samples were determined against three fungi (*Candida albicans*, *Penicillium expansum* and *Aspergillus niger*). The bioassay showed that the extracts exhibited good antimicrobial activity. On the basis of the results, it can be assumed the possibility of applying the supercritical carbon dioxide extracts from lovage as additives to food products in order to extend their shelf life.

Keywords: lovage, supercritical fluids extraction, antioxidant and antimicrobial activity.

CHARACTERIZATION OF A STRAIN OF *ACETOBACTER ACETI* ORLEANSIS ACETOBACTER UNDER PHYSICO-CHEMICAL ASPECT

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ABSTRACT

In this study it was analyzed the fermentation activity of a strain of *Acetobacter aceti* orleansis, T10, ranging main factors that influence the acetic fermentation. Acetic bacteria strain used in this study was isolated and identified based on morphological criteria micro- and macroscopic, by seeding on the liquid and solid selective media and on biochemical tests based on identification of acetic bacteria. Following this analysis it was determined that the acetic bacteria belongs to species *Acetobacter aceti*, subspecies *orleansis* (Bergey's Manual, 1974). Main factors watch in the study and who can influence acetic fermentation were: heterofermentative environment (white wine, rose wine, alcohol, alone or in combination), nutrient substrate (corn extract, yeast extract), alcoholic concentration, acidity, temperature and pH. Acetic fermentation activity of the bacteria was determined in terms of dynamics and efficiency of fermentation. Dynamics fermentation was watched by analyzing total acidity and residual alcohol content. Fermentation efficiency was determined by calculating the yield practically obtained. In samples where varied the heterofermentative environment, it was remarked the strain studied T10. This bacteria it behave best in acetic fermentation process, as acid and alcohol yield, in terms of tolerance to alcohol and acidity, which demonstrates that this species adapts well to stress produced by acidity and the alcohol of environment. The amount of 81 mg% anthocyanins of rosé wine studied did not inhibit the acetic fermentation of this strain. Qualities of fermentation of *Acetobacter* strain T10 recommended it like fermenting agent in the technology of vinegar, obtained from alcohol fermentation.

Keywords: fermentative activity, acetic bacteria, influencing factors of acetic fermentation

References

1. Bourgeois C.M., Larpent J.P., *Microbiologie alimentaire - les fermentations alimentaires*, vol. 2, cap. 6 - *Le vinaigre* (Dives C.), *Technique et documentation*, Lavoisier, Paris, 1989.
2. Dives C., *Contribution a l'etude de la production d'acide acetique et du metabolisme de l'ethanol par les bacteries acetiques*, Paris, 1973.
3. Hubert A. C., *Vinegar: Its History and Development*, *Advances in Applied Microbiology*, Volume 20, 1976, Pages 81-133.
4. Hommel R.K., Ahnert P., *ACETOBACTER*, *Encyclopedia of Food Microbiology*, 1999, Pages 1-7.
5. Plessi M., *VINEGAR*, *Encyclopedia of Food Sciences and Nutrition* (Second Edition), 2003, Pages 5996-6004.

