



HAL
open science

Characterisation of spoilage microflora in Rose flower and Orange Blossom hydrosols.

Cécile Labadie, Christian Ginies, Frederic F. Carlin, Catherine M.G.C. Renard

► **To cite this version:**

Cécile Labadie, Christian Ginies, Frederic F. Carlin, Catherine M.G.C. Renard. Characterisation of spoilage microflora in Rose flower and Orange Blossom hydrosols.. FoodMicro 2014, Sep 2014, Nantes, France. 2014. hal-02792745

HAL Id: hal-02792745

<https://hal.inrae.fr/hal-02792745>

Submitted on 5 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Characterisation of spoilage microflora in Rose flower and Orange Blossom hydrosols.

Cécile Labadie^{1,2}, Céline Cerutti¹, Christian Giniès^{2,3}, Catherine Renard², Frédéric Carlin²

¹ Albert Vieille SAS, 06227 Vallauris, France.

² INRA, Avignon Université, UMR408 Sécurité et Qualité des Produits d'Origine Végétale, F-84000 Avignon. France

³ INRA, UMR1260, Marseille, France.

Rose flower and Orange Blossom hydrosols are steam distillation products mainly used as food flavoring agents or ingredients of cosmetic products. These are subjected to microbial proliferation that can alter organoleptic properties and prevent cosmetic use due to non-compliance to professional microbiological standards. The aim of this study was to ascertain whether there were specific microorganisms in Rose water and Orange Blossom water, their growth parameters, and their impact on the aromatic compounds. Then, we determined the ability of some selected spoilage and pathogenic bacteria to grow in hydrosols.

Rose flower and Orange Blossom hydrosol samples from the Mediterranean Basin studied in this work contained a maximal amount of 0.06 % of essential oil giving the flavoring properties and quality; this concentration was not high enough to inhibit bacterial growth. These hydrosols also contained floral compounds carried over by foaming and priming during the distillation process. These non volatile compounds (sugars, fatty acids, and carboxylic acids), can be used as nutrients by microorganisms. Microbiological concentrations are generally comprised between 10^5 and 10^7 total counts cfu/mL and bacteria were the only micro-organisms detected in both products. Approximately 40 strains were isolated in both hydrosols from different locations. 16S rRNA gene sequencing identified the major species as *Pseudomonas sp.*, *Burkholderia sp.*, and two undefined species belonging to *Acetobacteraceae* and *Rhodospirillaceae*. Changes in populations were observed over 3 and 6 months storage period at ambient temperature and at 5°C. Changes in aromatic profiles during storage were also followed. Growth capacities of pathogenic species and spoilage bacteria had been followed in hydrosols. These results provide a better understanding of hydrosols microflora and may open the door for new ways to improve quality of Rose flower and Orange blossom hydrosols.