



Research project description

Project title:

Proteolytic antibacterial and antifungal substances from microalgae and plant microorganisms. Applications for bio-remediation and bio-control

Tunisian coordinator:

Dr. ABIDI Ferid, LIP-MB Laboratory, INSAT – University of Carthage

Morocco Coordinator:

Pr. LAZAR Saïd, Biochemistry, Food and Environment Unit URAC 36, Faculty of Science and Technology, Hassan II Mohammedia University-Casablanca.

Abstract

Food preservation aimed to maintain edibility, taste and nutritional properties. This particularly involves the prevention of microorganism growth and retarding the oxidation of fats which cause rancidity. Common methods of food preservation are mainly based on energy or mass transfer that aim to lengthen the life of foodstuffs (pasteurization and sterilization, drying, osmotic dehydration, refrigeration and freezing) or the transformation by some biochemical reactions or change of state (cooking, fermentation, obtaining state or crystallized glass ...). These transformations are rarely exclusive and often coupled transfers are associated with changes in state.

Fungi, bacteria and yeasts are more, primarily responsible for the alteration of food products such as dairy products, bread and crops in their conservation. Therefore, they cause extensive damage. Losses due to fungal contamination are estimated at 5-10% of world food production (Pit and Hocking, 1999). In addition to the visible damage, fungi such as *Aspergillus* and *Penicillium*, considered the greatest pests of food, can secrete mycotoxins and harmful allergenic derivatives for human and animal health (Kabak et al., 2006). The *Candida* yeasts and *Rhodotula* are also responsible for the deterioration of yoghurts and dairy products. Various means have been deployed to counter fungal contamination of foods. Among these techniques are described: physical methods such as drying, freeze-drying and preservation in cold as well as the use of chemical additives such as ascorbic acid, propionic acid and acetic acid. These chemical additives possess a broad spectrum of antifungal activity and are able to slow the growth of potentially producing mold toxins. However, their use is governed by a European standard (European Union, 1995).

The aim of our project is to contribute to the research of new producers of bioactive substance or proteolytic enzymes that could be used for biological control and improving the quality and food safety.