

Comparative Study between Orange Barley and Bark without Albedo

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Abstract

Citrus peels have an impressive range of food and medicinal uses. The present study was conducted to determine the difference between two types of orange peel; the first is whole and the second without albedo. The peels were separated from fruits, shade dried, powdered and analyzed (physicochemical and microbiological). The orange peels were found to contain low water content (especially powder without albedo), even a very low source of protein and minerals as well for both types of powders.

For the microbiological analysis, the results indicated that the whole orange peel is very infected purport with the powder containing no albedo.

Keywords: *Citrus sinensis*; Bark barley; Albedo; Microbiological analysis

Introduction

Mascara (northwestern Algeria) is one of the largest citrus producing cities of the world. The genus citrus, belongs to the Rutaceae or Rue family [1]. The genus Citrus is an important group of fruits rich in phenolic compounds as well as vitamins, minerals, dietary fibers, essential oils and carotenoids. They have a strong commercial value for fresh product market and food industry (Figure 1). Moreover, citrus production generates large quantity of wastes and by-products that constitute an important source of bioactive compounds [2]. The orange fruit is composed of an external layer (peel) formed by flavedo (epicarp or exocarp) and albedo (mesocarp), and an inner material called endocarp that contains vesicles with juice. The seeds are usually embedded at the centre of the fruit, in direct contact with the juice sacs [3].

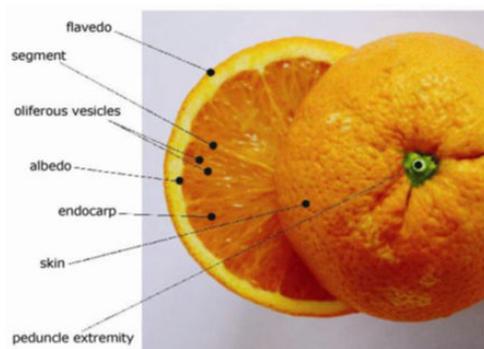


Figure 1: Structure of citrus fruit (*Citrus sinensis*).

The Study

The study was conducted in the University of Mustapha Stambouli-Mascara–algeria. Oranges (*Citrus sinensis*) were purchased from local market in between the month of February and March.

Analysis performed

Physico-chemical analysis: pH, ash content, total dry content and protein levels were determined for both Bark barley and Bark without albedo.

Microbiological Analysis: This analysis included the determination of total Sprouts and microbial analysis to check the activity of *Enterobacteriaceae*, *Fecal coliforms*, yeasts and molds.

Results and Discussion

The results for both the analysis were obtained and are depicted in Table 1.

Test	Bark barley	Bark without albedo
pH	4.67	5.31
Ash content	2.8	4.4
Total dry content	81	88.2
Protein levels	0.34	0.51

Table 1: Results of the physico-chemical analysis.

The orange peels contain low water content especially powder without albedo, which allows their best conservation, even a very low source of protein and minerals for both types of powders. For the microbiological analysis, the results show that the whole orange peel is very infected prone with the powder with no albedo (Table 2).

Test	Bark barley	Bark without albedo
Total sprouts	11	10
Enter bacteria	1	0
Fecal coliforms	120	94
Yeasts and molds	52	28

Table 2: Results of the microbiological analysis (colony).

Conclusion

The peels of citrus fruits are considered to be waste product of citrus processing in industries. In the present study, it has been proved that the peel can be used with or without albedo as it contains many antimicrobial properties and it can be proved as a novel antimicrobial agent.

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