

General chemical composition of almonds (*Prunus Amygdalus Miller*) grown in eastern Morocco

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Introduction

The production of almond's kernel "*Prunus dulcis*" has increased continually in eastern Morocco, from 136 000 T in 2012 to 183000 T in 2015. . It is a fruit tree that belongs to the Rosaceae family and it plays an important socio-economic and ecologic role.

To valorize this kernel, we have analyzed chemical composition of five varieties, which were determined as Marcona, Fournat, Ferragnes, Ferraduel and Bedi.

The aim of this study is to determine the composition of sweet almonds and its oil (AO) extracted mechanically from five most important varieties (Marcona (Mr), Fournat (FN), Ferragnes/ Ferraduel (F/F) and Beldi (B)). All this varieties were cultivated in Eastern Morocco

Materials & Methods

Samples of sweet Almonds (Crop years 2014/2015) of five varieties were collected from Sidi Bouhria region in eastern Morocco.

The extraction of almond Oil (AO) was realized by screw press Komet (model DD85G, Germany) in PRODIGIA Company in Casablanca.

Oil yield was calculated from the difference between almond weight and AO weight obtained by mechanical extraction.

Total sugars was measured by Bertrand Method

Total proteins was deduced from Measurement of total nitrogen witch determined by Kjeldahl method

Total dietary fibers was identified by enzymatic method AOAC 991.43.

Ashes .was measured by Furnace Muffle at 550°C for 16 hours. (AFNOR)

Fatty acid (FA) composition: FAs were analyzed by a HP 5880 A series GC System chromatograph, equipped with a capillary column (25m x 0.25mm x 0.26µm) and a FID detector.

Oxidative stability indices (OSI) of AO were evaluated by Rancimat model 743, Metrohm, Switzerland with an air flow rate of 15L/h and with a maintained temperature of 100°C at the heating block

All this results was the mean of tree consecutive crop years 2013, 2014 and 2015.



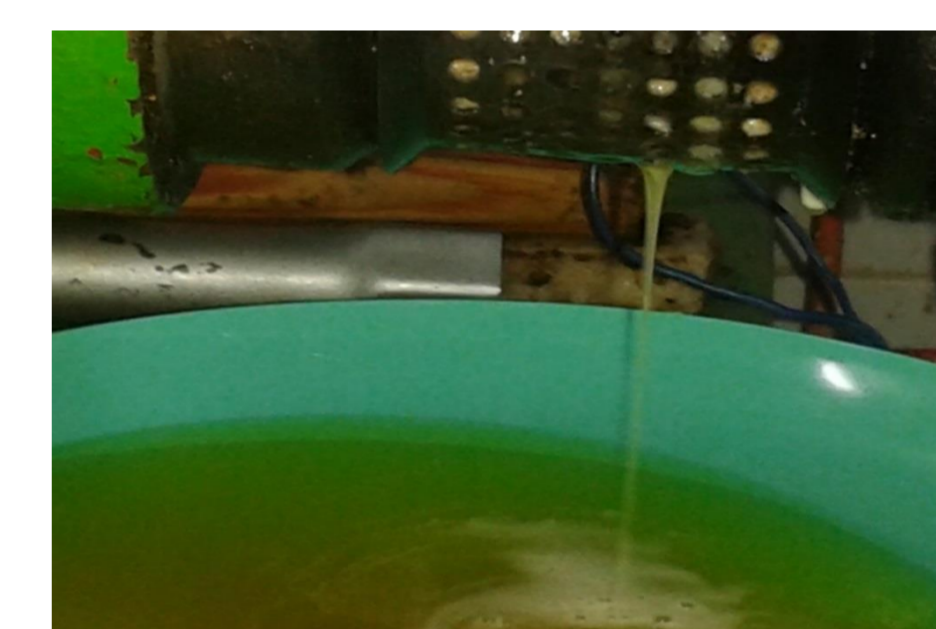
A: Almond fruit



B: Almond fruit



C: Almond kernel



D: Almond oil extraction

Results & discussion

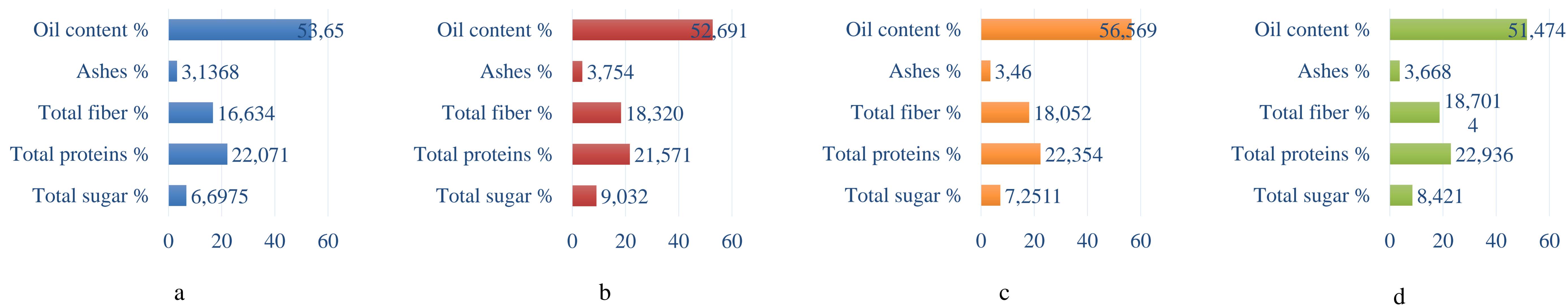


Fig 1 . Almond kernel composition of analyzed varieties : Marcona (a), Fournat (b), Ferragnes/Ferraduel (c) et Beldi (d)

Table 1. Fatty acid profile, oxidative stability and oil content of almond kernels oil

Fatty acid% & oil parameters	Marcona	Fournat	Ferragnes-Ferraduel	Beldi
C16: 0	8,0103 ±0,7462	7,7747 ±0,3977	7,0692 ±0,4798	7,7953 ±0,8726
C 18:0	2,7433 ±0,5182	2,4490 ±0,6521	2,1467 ±0,1773	2,0093 ±0,2175
C18: 1	60,7597 ±5,2942	62,5167 ±3,6386	69,3063 ±4,1708	64,7070 ±6,0460
C18: 2	27,4490 ±3,9919	26,4653 ±2,3025	20,5456 ±3,3884	23,4120 ±4,1695
SOI (h)	20,863 ±0,528	22,4111 ±2,671	27,9517 ±0,9953	10,2035 ±3,177
Oil content (%)	53,649 ±6,802	52,692±3,461	56,5688 ±5,55694	51,47410 ±3,16314

The composition of almonds was dominated by oil, followed by Proteins, fibers and sugars. Ashes occupies the latest rank.

F/F's AO had been the most stable among the three others, due to its high content of Oleic acid. This characteristic was confirmed by the oxidative stability indices which carried out by Rancimat test.

Significant difference of kernel composition was observed between varieties.