

Effect of Two Cooking Methods on Kinetics of Polyphenol Content, Flavonoid Content and Color of a Tunisian Meal: Molokheiya (*Corchorus olitorius*)

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Abstract : The main objective of this research was to establish the kinetics of variation of total polyphenol content (TPC) and total flavonoid content (TFC) in Tunisian *Corchorus olitorius* powder and in a traditional home cooked-meal (Molokheiya) when using stewing and stir-frying as cooking methods, but also to compare the effect of these two common cooking practices on water content, TPC, TFC and color. The L*, a* and b* coordinates values of the Molokheiya varied from 24.955 ± 0.039 to 21.301 ± 0.036 , from -1.556 ± 0.048 to 0.23 ± 0.026 and from 5.675 ± 0.052 to 6.313 ± 0.103 when using stewing and from 21.328 ± 0.025 to 20.56 ± 0.021 , from -1.093 ± 0.011 to 0.121 ± 0.007 and from 5.708 ± 0.020 to 6.263 ± 0.007 when using stir-frying, respectively. TPC and TFC increased during cooking. TPC of Molokheiya varied from 29.852 ± 0.866 mg GAE/100 g to 220.416 ± 0.519 mg GAE/100 g after 150 min of stewing and from 25.257 ± 0.259 mg GAE/100 g to 208.897 ± 0.173 mg GAE/100 g using stir-frying method during 150 min. TFC of Molokheiya varied from 48.229 ± 1.47 mg QE/100 g to 843.802 ± 1.841 mg QE/100 g when using stewing and from 37.031 ± 0.368 mg QE/100 g to 775.312 ± 0.736 mg QE/100 g when using stir-frying. Kinetics followed similar curves in all cases but resulted in different final TPC and TFC. The shape of the kinetics curves suggests zero-order kinetics. The mathematical relations and the numerical approach used to model the kinetics of polyphenol and flavonoid contents in Molokheiya are described.

Keywords : *Corchorus olitorius*, Molokheiya, phenolic compounds, kinetic

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