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Opinion Open Access

Measurement the Amount of Vitamin D_2 (Ergocalciferol), Vitamin D_3 (Cholecalciferol) and Absorbable Calcium (Ca^{2+}), Iron (II) (Fe^{2+}), Magnesium (Mg^{2+}), Phosphate (PO_4^{-}) and Zinc (Zn^{2+}) in Apricot Using High-Performance Liquid Chromatography (HPLC) and Spectroscopic Techniques

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Opinion

According to the importance of Apricots in families' nutrition basket, food chain and also its increased greenhouse, measure three of the nutrient and biochemical factors of Apricots were done [1-23]. Within the frame work of a plan, the amount of Vitamin D_2 (Ergocalciferol) and Vitamin D_3 (Cholecalciferol) in greenhouse and ordinary Apricots were compared together, respectively. Then, we made them pass through vacuum and collected the passed solution from High-Performance Liquid Chromatography (HPLC) columns and read them using some spectroscopic techniques such as Attenuated Total Reflectance Fourier Transform Infrared Spectroscopy (ATR-FTIR), FT-Raman and UV-Vis spectroscopies (Figures 1-5). In this regard, after providing the passive sample and also example and standard samples, we presented their standard curves and reported the amount of their Vitamin D_2 (Ergocalciferol) and Vitamin D_3 (Cholecalciferol), respectively. After that, the results were analyzed using Mathematica 10. The results of regression method show this method possesses all of characteristics of proceed method, completely. Through comparing these two kinds of Apricots (green house and ordinary Apricots) together, it can be concluded that there is no striking difference between the amount of Vitamin D_2 (Ergocalciferol) and Vitamin D_3 (Cholecalciferol) in the two kinds of Apricots. Therefore, as a nutrient recommendation for consumers, we cannot believe in any differences between them due to the amount of Vitamin D_2 (Ergocalciferol) and Vitamin D_3 (Cholecalciferol).

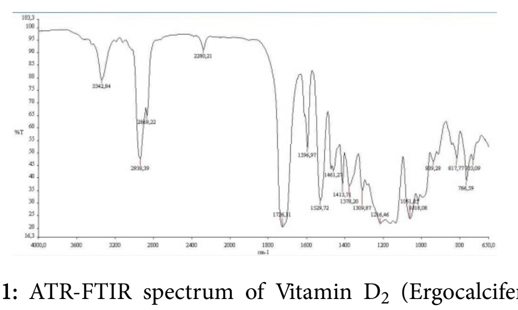

Figure 1: ATR-FTIR spectrum of Vitamin D_2 (Ergocalciferol) in Apricot.

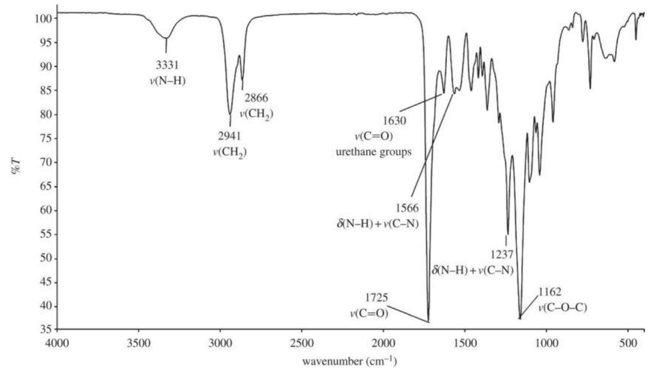

Figure 2: ATR-FTIR spectrum of Vitamin D_3 (Cholecalciferol) in Apricot.

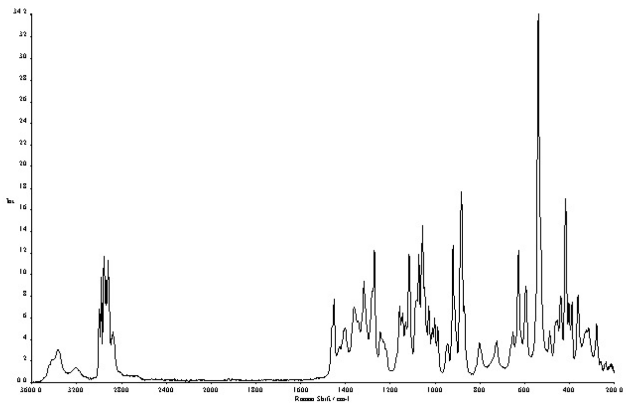

Figure 3: FT-Raman spectrum of Vitamin D_2 (Ergocalciferol) in Apricot.

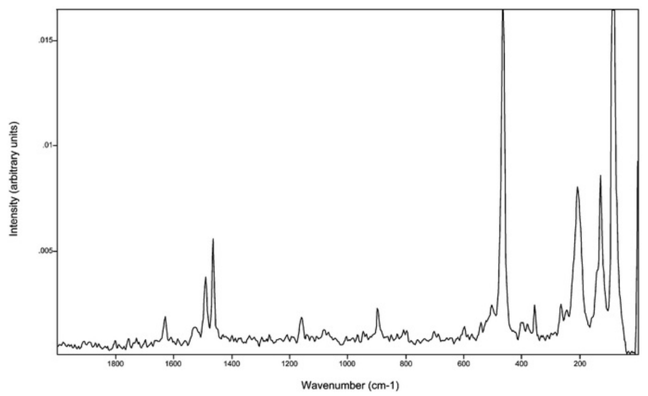

Figure 4: FT-Raman spectrum of Vitamin D_3 (Cholecalciferol) in Apricot.

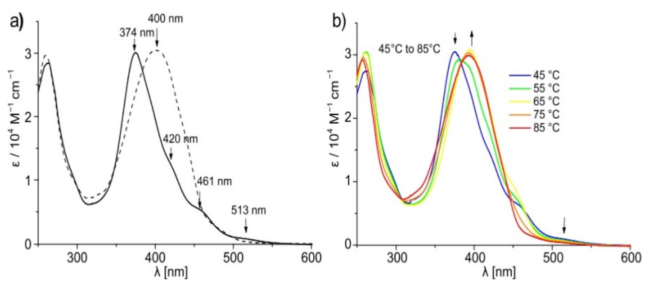

Figure 5: UV-Vis spectra of (a) Vitamin D_2 (Ergocalciferol) and (b) D_3 (Cholecalciferol) in Apricot in different temperatures.

On the other hand, according to increased growth of greenhouse and ordinary Apricots and because of this crop is known as an enriched source of absorbable Calcium (Ca^{2+}), Iron (Fe^{2+}), Magnesium (Mg^{2+}), Phosphate (PO_4^-) and Zinc (Zn^{2+}) [24-45], this investigation has been done at Faculty of Chemistry of California South University (CSU) from March 2015 to March 2016 to determine the amount of Calcium (Ca^{2+}), Iron (Fe^{2+}), Magnesium (Mg^{2+}), Phosphate (PO_4^-) and Zinc (Zn^{2+}) in both of kinds of Apricots. After periodical sampling of greenhouse Apricots and providing them in vitro samples, we were able to extract their mineral salts and consequently the amount of Calcium (Ca^{2+}), Iron (Fe^{2+}), Magnesium (Mg^{2+}), Phosphate (PO_4^-) and Zinc (Zn^{2+}) were measured in the salt. To do this, after taking the passive sample and also testimony and measuring the intensity of absorption, their standard curves were plotted. As an important and novel result, it seems that by comparison between the amount of Calcium (Ca^{2+}), Iron (Fe^{2+}), Magnesium (Mg^{2+}), Phosphate (PO_4^-) and Zinc (Zn^{2+}) at 50 (gr) in greenhouse Apricots with the amount of Calcium (Ca^{2+}), Iron (Fe^{2+}), Magnesium (Mg^{2+}), Phosphate (PO_4^-) and Zinc (Zn^{2+}) at 50 (gr) in ordinary Apricots, it can be concluded that the amount of Calcium (Ca^{2+}), Iron (Fe^{2+}), Magnesium (Mg^{2+}), Phosphate (PO_4^-) and Zinc (Zn^{2+}) in greenhouse Apricots is lower than ordinary Apricots, clearly. Therefore, although desirable of greenhouse Apricots is apparent, the amount of absorbable Calcium (Ca^{2+}), Iron (Fe^{2+}), Magnesium (Mg^{2+}), Phosphate (PO_4^-) and Zinc (Zn^{2+}) in it is lower than ordinary Apricots.

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