

# Investigation Effective Moisture Diffusivity and Activation Energy on Convective Hot Air Drying Assisted Extraction of Dragon Fruit Slices

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Good drying system is evaluated by its efficiency in removing the moisture content of products to a certain level and at the same time decrease the quality degradation that occurs in drying process. The objective of this study was to investigation effective moisture diffusivity and activation energy on convective hot air drying assisted extraction of dragon fruit slices. Drying experiments were performed under 3 temperatures of 60, 70 and 80°C, air velocities of 1.0 m/s and two thickness of thin layer of 3 and 5 mm. Investigate the effect of drying conditions on drying kinetics and qualities attributes of dragon fruit slices, namely, antioxidant activity determined by DPPH methods and total color changes ( $\Delta E$ ) of dried dragon fruit slices. The results show that the drying time decreased with increased in drying temperature but increased with the decreasing of thin layer thickness. The highest effective moisture diffusivity thickness thin layer of 3 mm was found to be  $3.55 \times 10^{-9} \text{ m}^2/\text{s}$  and thickness thin layer of 5 mm was found to be  $9.21 \times 10^{-10} \text{ m}^2/\text{s}$ , effective moisture diffusivity increased with the temperature. An Arrhenius relation with an activation energy showed that a higher value of thickness of thin layer of 3 mm. The experimental results showed that higher drying temperature led to higher effective diffusion coefficient, antioxidant activity and total color changes.

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