Minimising Colour Change of Cleaned Edible Birds's Nest by Applying Appropriate Processing Strategy

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Abstract

Edible bird's nest with appealing colour is of importance in offering high grade of edible bird nest with a pleasant appearance to consumers. This in turn enhances its commercial value. Nevertheless, bird nest processing always results in browning often due to high temperature processing or long duration processing. Thus results in degradation of its optical quality. Consequently, affects the grading of the cleaned dehydrated bird nest. This in turn incurs possible food safety issues if industrial players try to improve the optical quality by applying blanching agent or chemicals to make the appearance of the bird nest whitish. Therefore, minimising colour change or maintaining whitish colour of bird nest throughout the drying process becomes vital in the bird nest processing industry. In this regard, applying the appropriate drying method is the key to achieve this objective.

In the present study, a low temperature dryer was used to investigate the potential of dehumidified medium (26°C, 27%RH) in enhancing drying kinetics and minimizing colour change of cleaned bird nest during processing. Drying kinetics and colour kinetics of sample in the low temperature drying were determined. Comparison was made against conventional hot air drying (50°C-90°C, 2%RH-24%RH). The results show

that bird nest sample in low temperature drying took about 9 hours to achieve its equilibrium moisture content (Figure 1) and total colour change of the final product was the lowest among other drying methods. On the other hand, drying rate of hot air dried sample was found increasing with temperature (Figure 2). Total drying time to achieve equilibrium moisture content was recorded at 9 hours, 8 hours and 5 hours for hot air temperature of 50°C, 70°C and 90°C, respectively. However, the elevated hot air temperature had resulted in higher total colour change (Figure 3). It was observed that colour kinetics of sample was sensitive with temperature particularly in the first 5 hours of drying. Therefore, it is essential to keep the temperature as low as possible during the initial stage of drying. Low temperature drying would be a good option as it provides relatively high drying rate at mild drying temperature as compared to hot air drying.

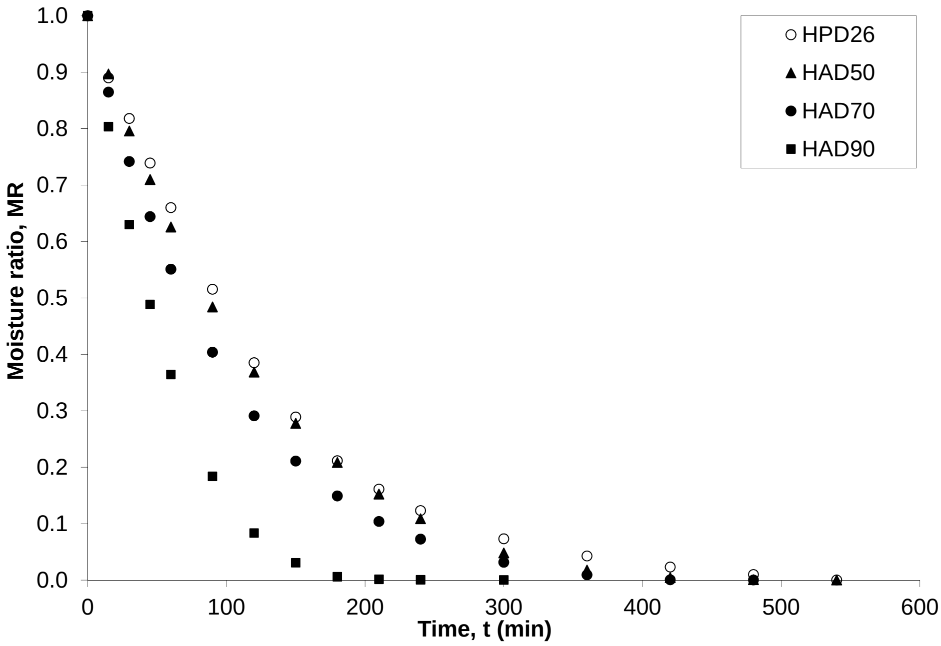

Figure 1 Moisture ratios of samples in low temperature drying (HPD26) and hot air drying (HAD50, HAD70 and HAD90)

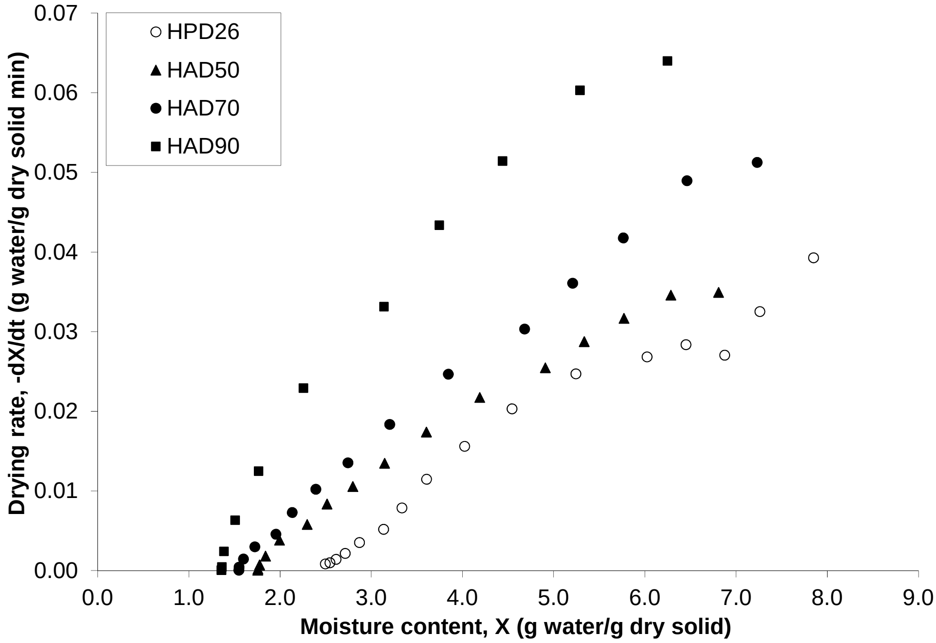

Figure 2 Drying rate curves of samples in low temperature drying (HPD26) and hot air drying (HAD50, HAD70 and HAD90)

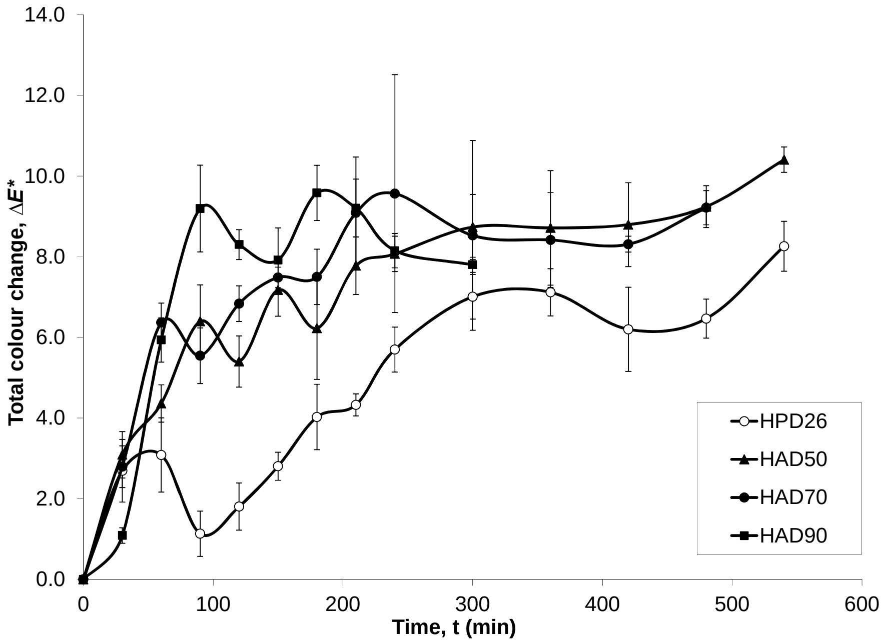

Figure 3 Colour kinetics of samples in low temperature drying (HPD26) and hot air drying (HAD50, HAD70 and HAD90)