

## Development and Nutritional Evaluation of Date-Based Energy Bar Formulated with Dehydrated Banana Chips

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Most commercial energy bars contain high levels of added sugars, refined syrups, and fats. Regular consumption of such products contributes to excessive calorie intake and increases the risk of non-communicable diseases. This study aimed to develop a date-based energy bar incorporated with dehydrated banana chips without the addition of sugar and salt. Dates, bananas, rice flakes, pumpkin seeds, sesame seeds, peanuts, mung beans, coconut oil, and banana flavor were used as ingredients. Three formulations were developed by varying the proportion of date paste and dehydrated banana chips and other ingredients were kept constant across all treatments. The formulations were evaluated for proximate composition, color parameters, microbial safety, and sensory attributes. According to the results, crude protein, crude fat, and dietary fiber contents ranged from 9.99-10.06%, 6.71-6.75%, and 6.99-7.165 respectively. However, ash and sugar contents showed significant differences among the treatments, ranging from 1.58-1.68% and 17.20-19.00% respectively. Moisture content, color and total plate count (TPC) were monitored throughout 21 days of the storage period room temperature (28±2 °C). Moisture content and color values increased significantly during storage. However, T1 exhibited the lowest moisture increase (12.24-13.37%) compared to T2 (15.13-19.03%) and T3 (12.72%-14.86%). T1 demonstrated the stable physiochemical properties, retaining the redness (a\*) value (7.36 ± 0.19) by the third week of storage. T1 remained microbiologically safe during storage, with a final TPC of  $1.0 \times 10^4$  CFU/g, well below the acceptable limit of  $1.0 \times 10^6$  CFU/g. Sensory evaluation concluded that the T1 formulation provides favorable physical stability and sensory acceptability.

**Keywords:** Date paste, Dehydrated banana chips, Energy bars, Physiochemical properties, Proximate composition