

## **ABSTRACT**

Tea, processed leaves of plant *Camellia sinensis*, is known to be a rich source of polyphenols having antioxidant property. Incorporation of these important tea components in various tea products can impart the benefits of antioxidants in them. Tea fortified fruit (papaya) bar, prepared by addition of spray dried tea extract powder is taken for the measurement of some quality parameters viz., chemical components and physical properties, during storage. For this, firstly the changes moisture content, total polyphenols and antioxidant activity of black tea extract powder sample are measured up to 60 days of storage under ambient condition. During this period, moisture content changed from 0.0418 to 0.0563 (kg/kg, db), total polyphenol from 24.12 to 23.91%, and antioxidant activity from 71.19 to 71.04%, indicating a reasonably stability. Then, tea fortified papaya bar was produced by incorporation of black tea extract powder in conventional formulation and using conventional process specification. Three levels of tea extract concentrations coded as T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> were considered. Expert panelists from Tea Research Association, Jorhat indicated that combination T<sub>2</sub> gives an appealing color whereas; T<sub>3</sub> gives bitterness specific to tea flavour, T<sub>2</sub> is chosen for further studies. Further, based on the experimental drying data obtained during papaya bar preparation, drying kinetic model was developed by fitting Page's equation for predicting drying time at different drying temperatures. Moisture absorption characteristics of control and fortified samples with storage time were studied under ambient conditions and accelerated conditions. Periodic measurement of textural property values of fortified bars coded T<sub>2</sub> and the control, along with moisture content, indicate that moisture absorption leads to decrease in hardness, chewiness, and gumminess. As the fortified sample coded T<sub>2</sub> has a lower moisture absorption rate as compared to the control, rise in the moisture content for control under accelerated condition is up to 0.154 (kg/kg, db) as compared to 0.146 (kg/kg db) for sample T<sub>2</sub>. Both followed a similar trend i.e. rapid rise till 0.12 (kg/kg db) and 0.1 (kg/kg db) by 20<sup>th</sup> day. Hardness of both control and T<sub>2</sub> showed a drastic reduction at moisture content of 0.12 (kg/kg db). For storage under ambient condition, similar reduction was observed at 0.15 (kg/kg db).

***Key words:*** black tea, polyphenols, antioxidant, tea extract powder fortified fruit bar, absorption, textural attribute, Page equation.