

## Abstract

Studies were carried out to evaluate the performance of hybrid solar tunnel-windmill dryer in thin layer drying of brined and non-brined Tafi (*Siganus spp.*) fish. The fish were, eviscerated, and split into pieces of approximately 6cm by 4cm by 5mm was soaked in brine at 0 and 5% concentrations. The samples were dried in the dryer for 44 hours. The moisture content of the drying fish was evaluated by the AOAC oven drying procedure. In addition, analysis was carried out to establish the best thin layer drying model that describes the drying of fish in the hybrid wind-solar tunnel dryer. The moisture content of the drying fish was found to reduce linearly from 4.2 and 3.9kg/kg (*db*), respectively for brined and non-brined fish to 0.8kg/kg (*db*). A two way Students *t*-test did not establish any significant difference in the drying of salted and unsalted fish ( $t_{\text{stat}}=1.4032$ ,  $t_{\text{crit, 5\%}}=2.0687$ ). Further, the page thin layer drying model was found to be the best model describing the thin layer drying of Tafi fish in the hybrid solar tunnel-windmill dryer ( $R^2=0.9655$  and  $0.09434$ ;  $\text{RMSE}=0.0539$  and  $0.0840$  for unsalted;  $c^2=0.0032$  and  $0.0077$ , for salted and unsalted fish, respectively). These results provide useful information in the modelling and design of solar drying systems for the drying of Tafi fish.