The main objective of this work was to study the effect of drying temperatures on physical qualities of rice in terms of head rice yield, whiteness and hardness. Two varieties of long grain paddy (Indica rice) used in the experiments were Suphanburi 1 and Pathumthani 1. Suphanburi 1 and Pathumthani 1 varieties contained amylase content of 27% and 15-17.8%, respectively. The batch drying experiments were set up at an airflow rate of 2.5 m/s and a bed depth of 9.5 cm. Paddy was dried from an average initial moisture contents of 25.6-33% dry basis (d.b.) to 22% d.b. using hot air temperatures between 40 and 150 °C. After drying, the paddy was tempered and followed by ventilation with ambient air until its final moisture content was reduced to 16.3% d.b.

The results have shown that whiteness and head rice yield for paddy containing any moisture content level up to 33% d.b. when subjected to be dried at temperatures below 80 °C insignificantly changes from that of the reference sample, which was dried by the ambient air ventilation. Drying at temperature above 100 °C provides relatively higher head rice yield and the slightly more yellow around the surface of white rice. The texture analysis was concluded that the hardness of rice with high amylase content and low amylase content were not significant effected by drying air temperature ranging between 40 °C and 150 °C at paddy moisture content of 18% d.b. after fluidized bed drying. The experimental results implied most of the physical properties of rice were not changed by drying temperature except the yellowing of rice. The yellowness of rice depended on the non-enzymatic reaction during drying.