

# Quality evaluation of hot air-dried mangoes through heat sensitive enzymes

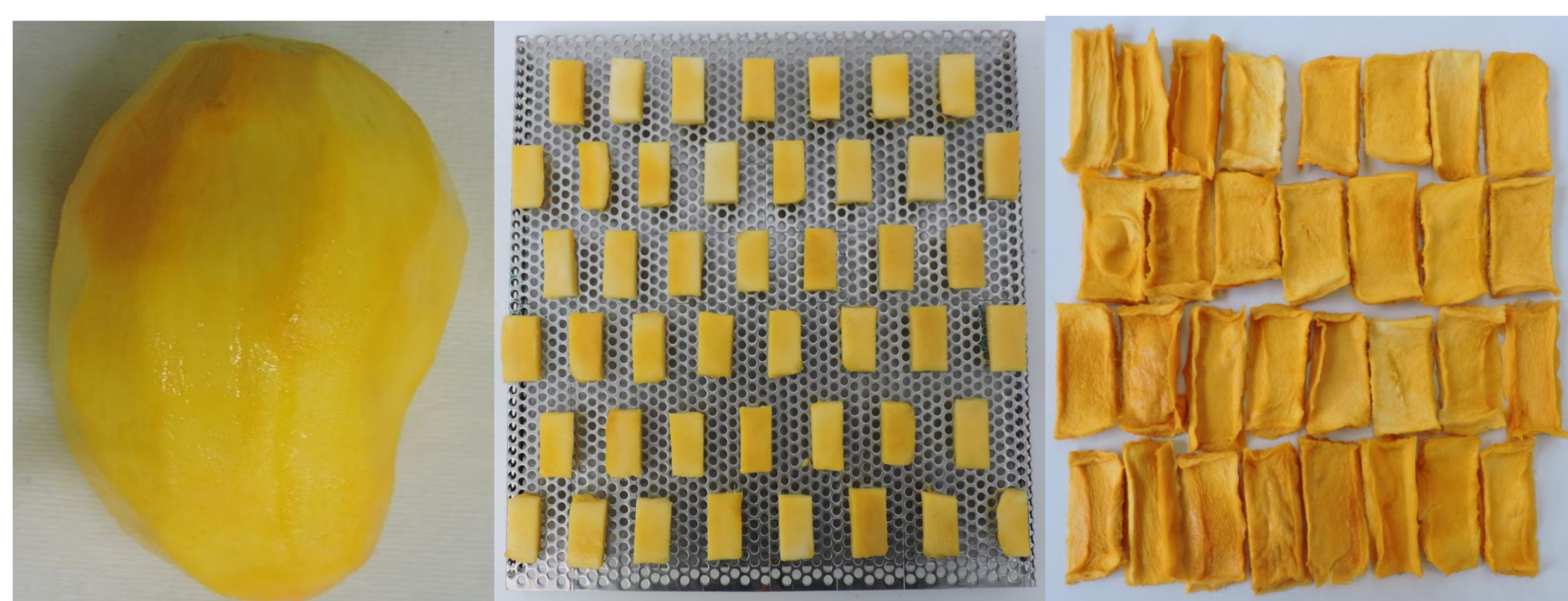
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## Introduction

- Mango fleshes have great importance due to rich nutritional value and good source of enzymes.
- Presently, different heat processing techniques are being used to dry mangoes for longer shelf life. Drying at higher temperature not only decreases the nutritional value of the dried fruit but can also cause the destruction or wrecked the enzyme active sites.
- In this study, the retention of heat sensitive enzymes (HSEs) was estimated to test the quality of hot air dried mango.

## Material and Methods

- Fresh and medium ripe mango of three varieties, Sindri and Samar Bahisht (SB) Chaunsa from Pakistan while Tommy Atkins from the local market of Stuttgart were obtained.



- The samples were dried with hot air oven (over-flow drying technique) (40°C, 50°C, 60°C, 70°C and 80°C) to the target moisture level below 15% dry basis (db) and hygienically safe water activity ( $a_w$ ) < 0.6.

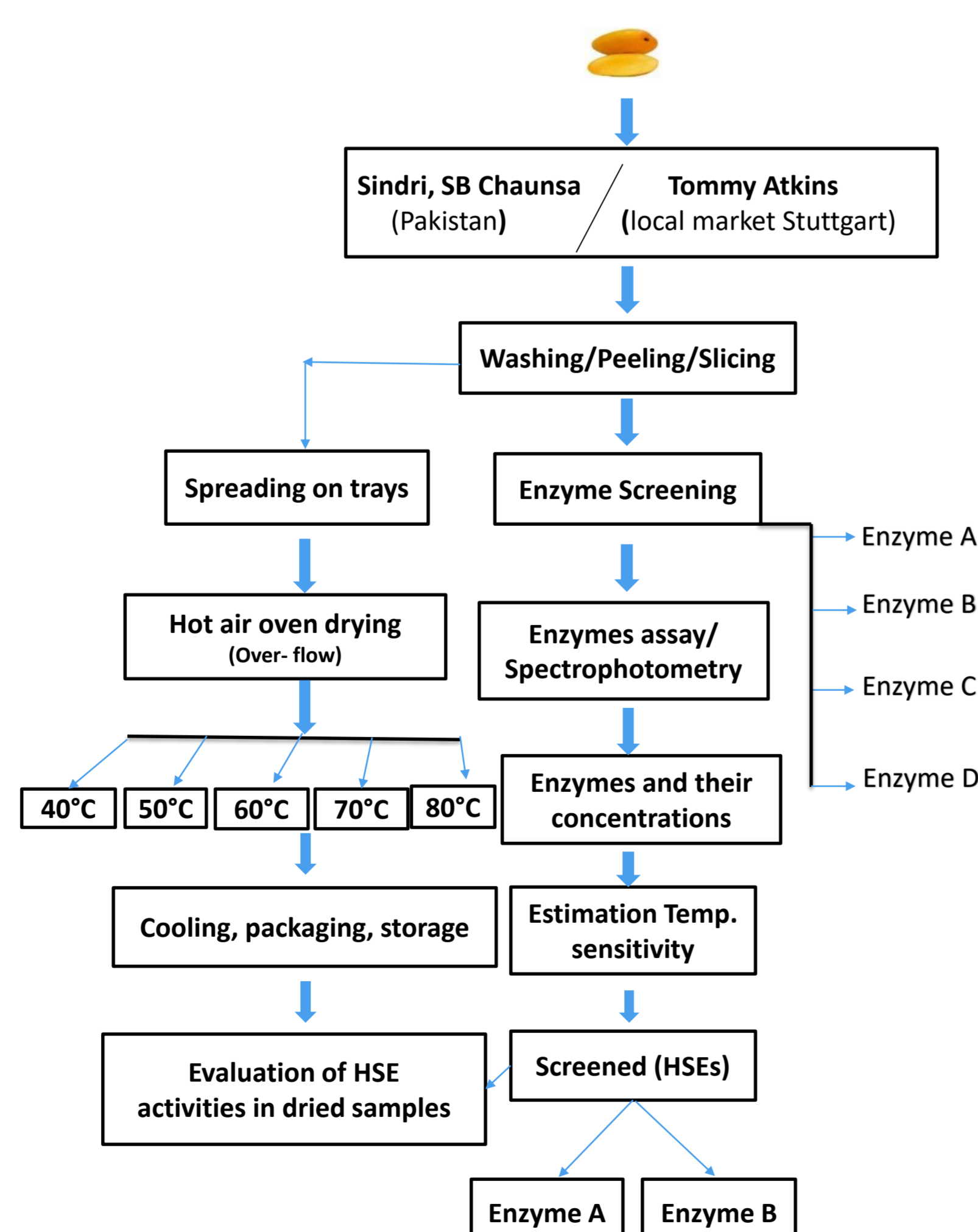


Fig. 1 Flow chart for the experimental layout

## Results

During drying the activity of HSEs in all three varieties significantly ( $p < 0.05$ ) decreased (28-98%). However, maximum activity of enzyme A (48-68%) and enzyme B (50-72%) was retained in samples dried at low temperature 40°C. The increase in drying temperatures such as 50°C, 60°C 70°C and 80°C caused more destruction of HSEs. The minimum retention of enzyme A (2-7%) and enzyme B (8-14%) was noticed in samples dried at 80°C.

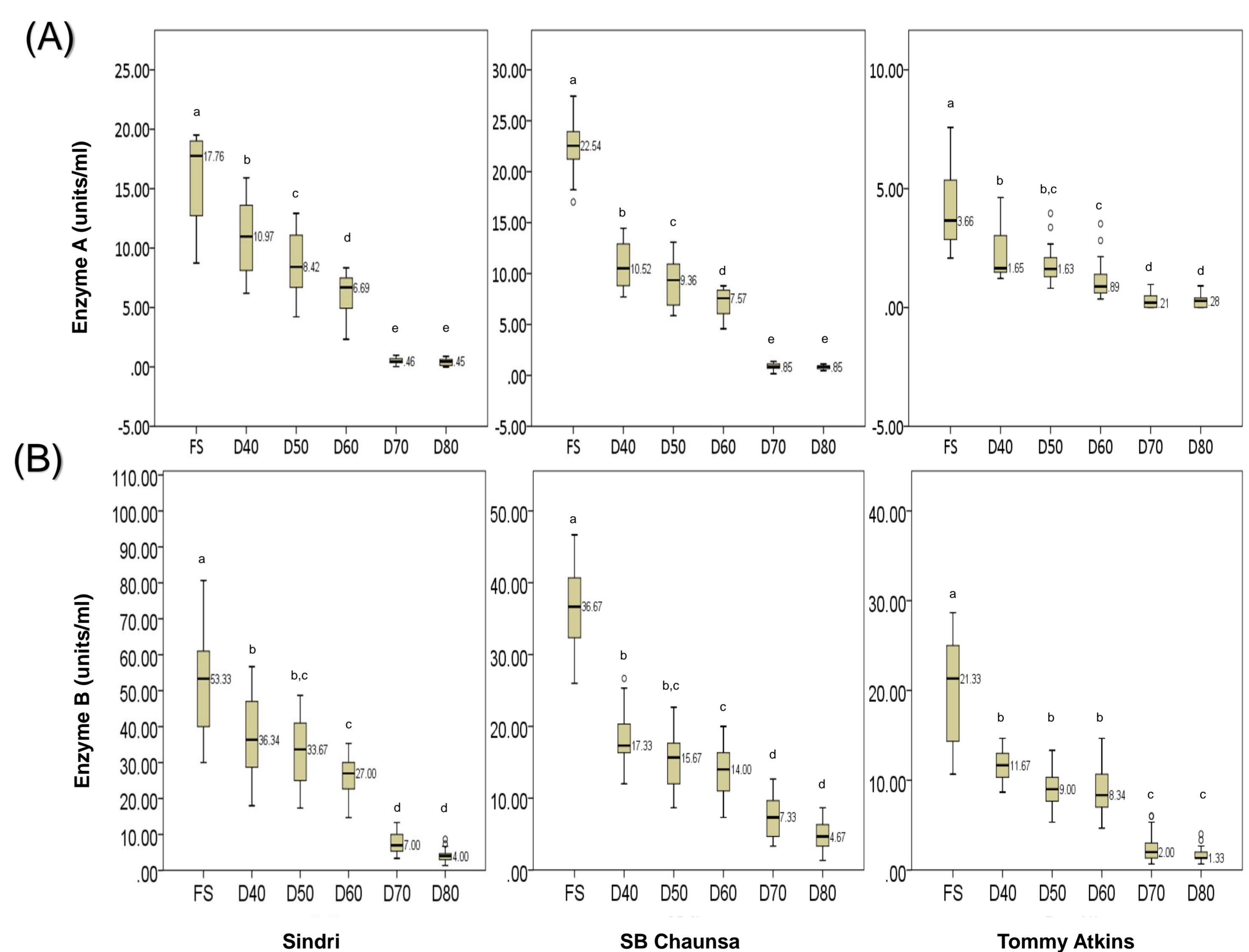


Fig. 2 Changes in enzyme (A) and (B) activity (units/ml) in three mango varieties Sindri, SB Chuansa and Tommy Atkins. Where FS = Fresh sample, D = dried samples at different temperatures

## Conclusions

- Through this study, we concluded that low drying temperature favorable for high enzyme retentions and to produce high quality dried mango.
- By counting the residual enzyme units in dried mango samples, it is possible to provide information about the drying operational temperature and to optimize the drying technique.