Sensory quality of kheer manufactured in scraped surface heat exchanger

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Introduction

Sensory quality of Kheer manufactured in Scraped Surface Heat Exchanger (SSHE) was evaluated in different operating conditions of the machine. The SSHE consists of jacketed product tube fabricated from AISI 304 grade stainless steel plate, spring loaded scraper assembly, vapour hood, drive arrangement for the scraper assembly as well as and measuring and control instruments. The experimental Kheer was prepared in the SSHE using Gujarat 17, the local variety of rice widely cultivated in Gujarat state.

Objective

The sensory quality of Kheer manufactured under various operating conditions of SSHE was evaluated at,

Different scarper speeds (S1=10 r.p.m., S2=20 r.p.m., S3=30 r.p.m.),

Operating steam pressures (P1=1.0 kg/cm2, P2=1.5 kg/cm2, P3=2.0 kg/cm2) ,

Batch sizes (B1=10 kg, B2=15 kg, B3=20 kg).

Methodology

A number of experimental trials were carried out on basis of different scrapper speeds, operating steam pressure and different batch sizes for production of kheer through SSHE. The sensory scores obtained using the 9 point Hedonic score card for flavour, body & texture, colour & appearance and overall acceptability of the kheer were analyzed statistically at 5% level of significance.

Result and Discussion

The P1B3S2 combination showed highest score for flavour among other combinations of variables. The kheer samples manufactured using P3B1S1 combination had lowest flavor score of 7.33.

The P3B1S2 and P3B1S3 combination of operating variables yielded the kheer with the lowest score of 7.05 for colour & appearance attribute.

The samples prepared in P1B3S1 conditionhad the highest score of 7.68 for body & texture attribute. The score of kheer for P3B1S1 combination had the lowest scores of 5.83 for body & texture attribute.

The P1B3S3 combination had the highest scores of 8.14 for overall acceptability indicating that product is liked very much by the panel of the judges.

The study indicates that operating conditions of the SSHE is required to be standardized based on the batch size and type of rice selected for the manufacture of Kheer.