

Improved Jameed Processing for Small Scale Sheep Dairy Farms in Jordan

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Introduction

Jameed is an important dairy product in Jordan that has been produced in the region for centuries and used as a main ingredient in popular traditional cuisine called Mansaf. Jameed is a hard dry skimmed yogurt, mainly processed using sheep milk using a small scale labor-intensive process. Jameed processing is an important part of the livelihoods of small ruminant keepers and contributes up to 20% of the households' income.

The International Center for Agricultural Research in the Dry Areas (ICARDA) developed activities oriented to improve the productivity and income of dairy producers households. Women are at the core of Jordan's dairy processing sector forming the majority of the sector's workforce, they are a key contributor to household incomes and rural economies. On-going efforts to improve the productivity, hygiene and profitability of dairy production provide an opportunity to fundamentally improve the livelihoods of producers' families.

This study aims to highlight and evaluate results obtained on composition and color of jameed samples processed by the improved method in comparison to Jameed processed by the current traditional method.

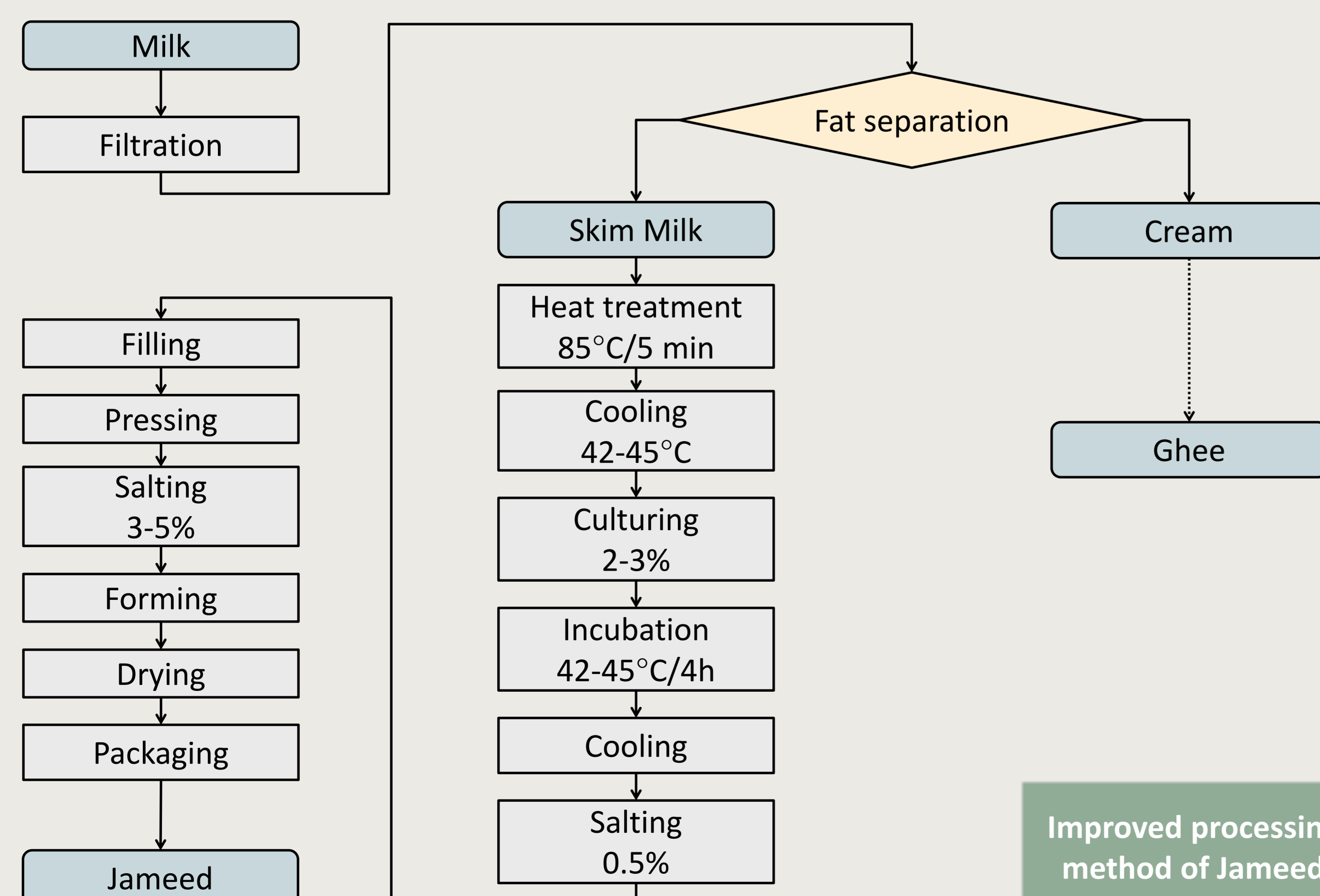
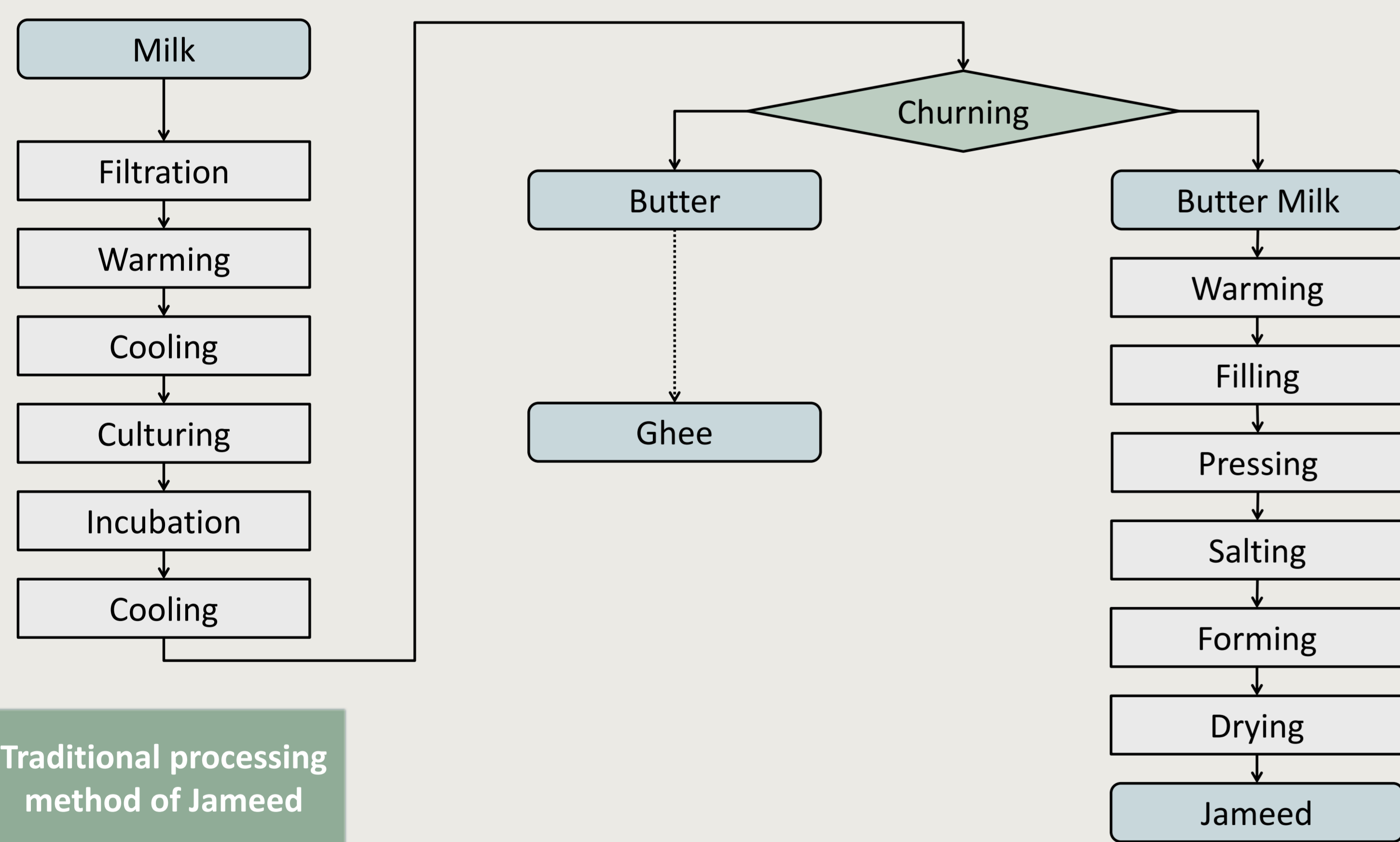


Methods

Ninety Jameed samples were collected from the market over the country with information to processing methods used. The chemical characteristics were determined using standard methods. The Jameed color was measured according to CIE Lab system.

Processing

A modified processing method was developed and tested at the International Center for Agricultural Research in the Dry Areas (ICARDA) that is based on the use of a milk fat separation technique to obtain skimmed milk that is in turn processed into skimmed yogurt and then dried directly to produce Jameed without the churning process.



Results

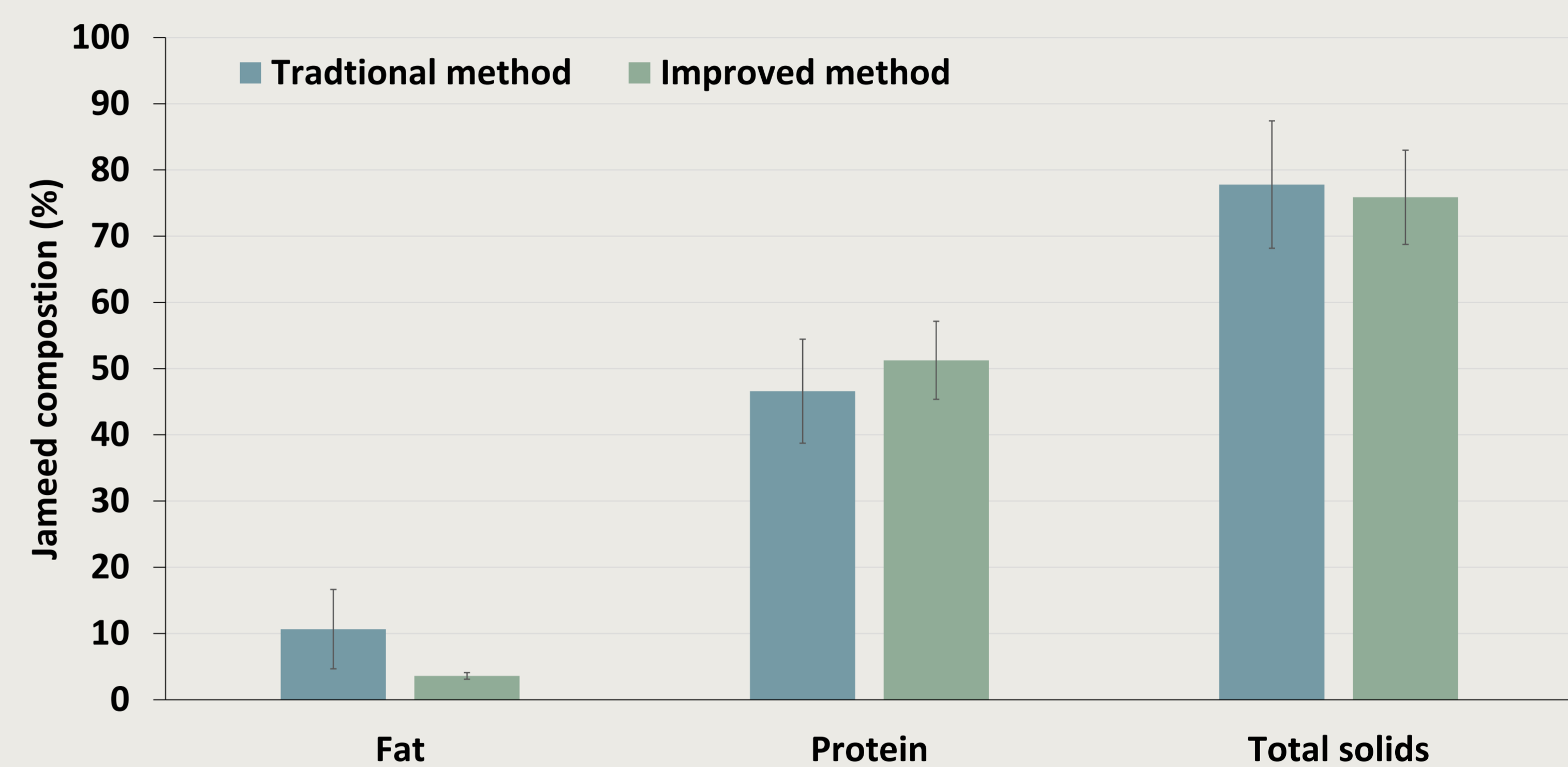
Jameed composition

The 8 batches of Jameed produced using the developed improved processing method in small-scale processing units had 67% less fat compared to the other

traditional processed samples ($P < 0.05$). Moreover, extreme fat content was detected in some traditional processed jameed up to 30% showing heterogeneity in fat content which is due to a clear low churning efficiency during the processing steps.

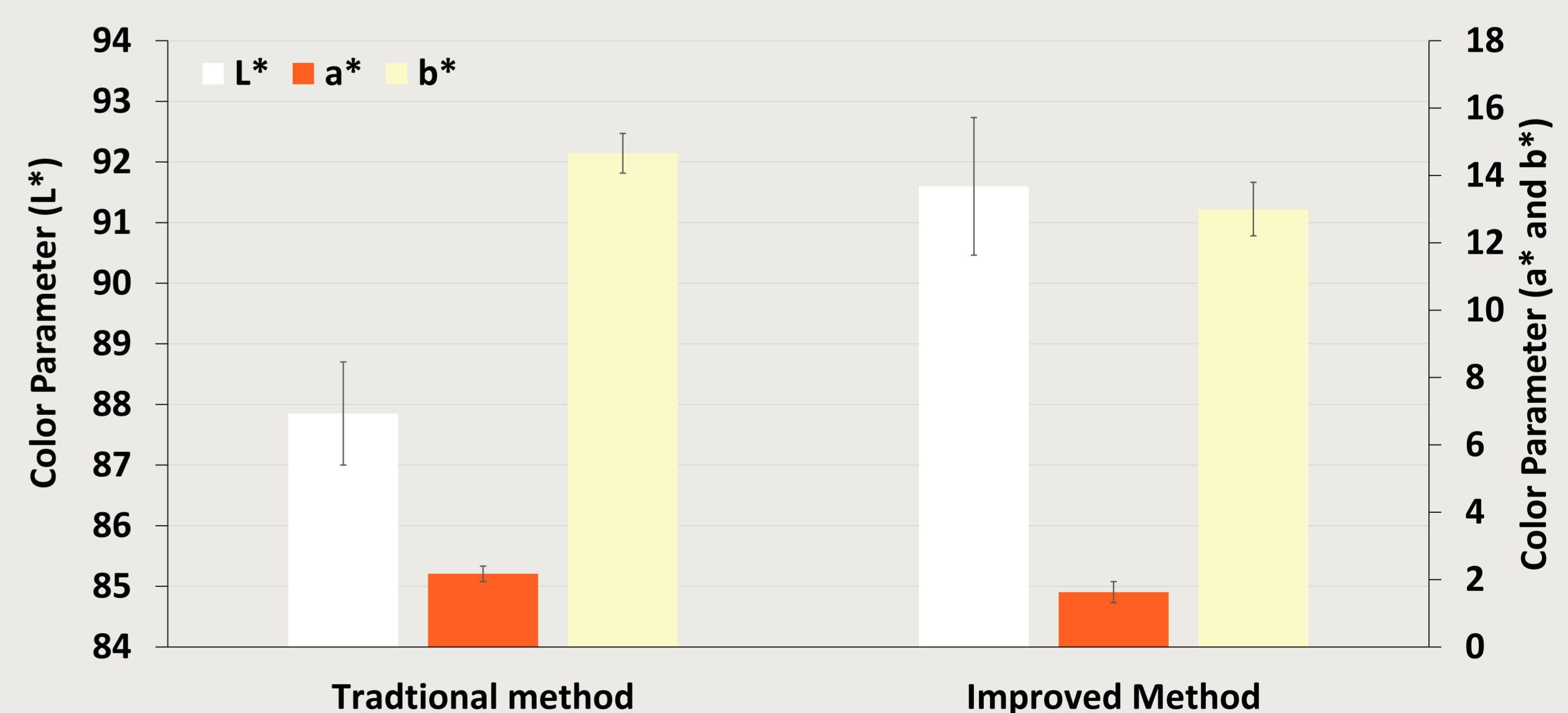
The content of protein was 10% higher compared to Jameed produced from the traditional method, however these differences were not significant. Further changes in total solids were also not significant.

Due to the improved fat recovery in the modified method, the ghee yield increased by 29%. Moreover, the product homogeneity was improved by 60% with regard to fat and by 25% in total solids contents.



Color analysis

The Jameed measured color parameters L^* (lightness value), a^* (green-red), and b^* (blue-yellow) indicated that Jameed produced by the modified method was 4.3 % lighter in color ($P < 0.05$), which is preferred by consumers. Parameter a^* tended to become more to red in samples produced by the traditional method whereas the jameed samples produced by the improved methods tended to become less yellow which could be due to the higher churning efficiency and fat separation.



Economical evaluation

A simple cost benefit analysis confirmed that the modified method results in a 60% saving in energy and water inputs which is a significant benefit in a water-energy-scare country. The expected price premium as a result of improvement in the quality of Jameed is conservatively estimated at 5%. The combined effect of the cost savings and additional revenue is an increase in net margins (profit) of at least 20%.

