

### Phospholipase Application in Milk: Does It Improve Cheese Yield of Gouda?

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Gouda cheese is one of the most important and value-added dairy products, which has expanded over the world market as a commodity type cheese. Cheese yield has a great economic importance when determining the profitability of a cheese manufacturing plant. This study was conducted to evaluate the effect of fungal phospholipase A<sub>1</sub> (PLA<sub>1</sub>) from *Fusarium venenatum* on the yield of Gouda by adding PLA<sub>1</sub> prior to renneting of Gouda cheese milk. In the current study, the most appropriate PLA<sub>1</sub> concentration on the yield improvement of Gouda was determined out of three different PLA<sub>1</sub> concentrations. Thus, four Gouda samples were manufactured from cow milk; T<sub>1</sub> (1.26 g PLA<sub>1</sub>/15 L of milk), T<sub>2</sub> (1.44 g/15 L), T<sub>3</sub> (1.62 g/15 L) and control Gouda. The compositional analysis of whey, sensory evaluation, compositional analysis and microbiological analysis of Gouda samples were carried out. Standard formats of yield expressions were calculated for all the treatments. The use of high concentration of PLA<sub>1</sub> (1.62 g/15 L) in Gouda cheese milk had increased ( $p<0.05$ ) the actual yield, the milk protein plus fat adjusted yield and the moisture adjusted milk protein plus fat adjusted yield by enhancing fat and crude protein composition in cheese. The sensory evaluation revealed that the Gouda manufactured using minimum concentration of PLA<sub>1</sub> (1.26 g/15 L) was highly preferred ( $p<0.05$ ) by the panelists. Microbiological tests revealed that all treatments were safe to consume within forty-five days of ripening period at 10-17 °C and 80-85% RH. The highest PLA<sub>1</sub> (1.62 g/15 L) concentration can be selected as the most appropriate treatment on yield improvement of Gouda which can be further improved in industrial cheese trials.

**Keywords:** Cheese milk, Cheese yield, Fat adjusted, Gouda cheese, PLA<sub>1</sub>

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