

**AN ATTEMPT TO PRODUCE LOW FAT PROBIOTIC EDAM-LIKE
CHEESE FROM GOATS' MILK WITH ACCEPTABLE QUALITY**

**Ahmed El-Zawahry¹, Abd El-Baky A.A², N.M.El-Shafie²
and M.M.Nasr¹**

1- Dairy Technology Department, Animal Production Research Institute, Dokki, Egypt.

2- Department of Food Science, Faculty of Agriculture, Zagazig University, Egypt.

ABSTRACT

In this study, a trial has been made to produce a low-fat probiotic Edam-like cheese made from goats' milk with acceptable quality. The effect of both additives; whey proteins concentrate (W.P.C.) and heat shocked starter cultures were examined. Three treatments of low fat probiotic Edam-like cheese were made as follows: Goats' milk was standardized to 2% fat, heated at 92°C, cooled to 37 °C and ABT3 culture was added then milk was divided into three parts. The first part was processed into Edam-like cheese without additive; the second part was first incorporated with whey proteins concentrate (W.P.C) at a level of 1.5 %, then processed into Edam-like cheese. The third part was incorporated with 1.5 % W.P.C and 2 % heat shocked starter cultures contained lactobacillus delbreckii subsp helveticus and lactococcus lactis subsp diacetylactis at a ratio of 1:1. Resultant cheeses were divided into two groups, the first group was ripened at 10-13°C, while the second group was ripened at 5-8°C. In addition cheese was made from full fat cow's milk (4%) heated at 72°C / 15 sec. and ripened at 10 ± 2°C for comparison (control). All the resultant cheeses were ripened at 85-90% RH. The obtained results showed that, addition of W.P.C alone or combined with heat shocked starter cultures to processed milk increased cheese yield and reduced the loss of weight particularly when cheese was ripened at 5-8°C. The use of whey proteins and heat shocked starter cultures in the manufacture of cheese from low fat milk increased protein breakdown. Development of cheese fat acidity and accumulation of volatile fatty acids were more remarkable in cheese ripened at 10-13°C. Addition of both W.P.C and heat shocked starter cultures had no remarkable effect on the levels of goaty flavor compounds especially 4-ethyloctanoic and 4-methyloctanoic acids. Regarding the microbiological tests, it was found that cheese made from low fat milk processed with addition of both whey proteins concentrate and heat shocked starters had higher total proteolytic and lipolytic bacterial counts compared with other treatments. Hardness of cheese made with the addition of W.P.C alone or combined with heat shocked starter cultures was lower than that of cheese made without additives. Addition of both W.P.C and heat shocked starter cultures to low fat cheese milk and ripened at 10–13°C improved the organoleptic properties. The highest score points was observed in cheese with added whey protein concentrate and heat shocked starter cultures and ripened at 10–13°C.

Key words: protein degradation, goaty flavor compounds, proteolysis, lipolysis, cheese hardness.