

Production of some special dairy products

By

Azza Mahmoud Farahat

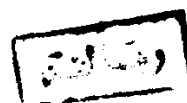
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ABSTRACT

Azza Mahmoud Farahat. Production of some special dairy products. Unpublished master of Science, Ain Shams University, Faculty of Agriculture, Food Science Department (1999).

The manufacture possibilities of several low calorie dairy products using the slendid as fat mimetic in relation to their properties were aimed to study.

Recombined buttery foods containing descending fat contents of 40, 30 and 20% replaced in order with 2, 3 or 4% slendid were made and compared with the standard recombined butter (80% fat). In other part the milk fat (MF) of the last treatment (20% fat) was substituted whether partially (50%) or totally (100%) with the stearin fraction of palm oil (PO). Moreover, low calorie yoghurt was made containing nil, 1 or 2% fat supplemented with 0.1, 0.15 or 0.2% slendid and compared with that of 3% fat. Furthermore, they were converted into low fat frozen yoghurt containing nil to 3% fat content (replaced conversely with nil, 0.1 and 0.15% slendid), 12% milk solids not fat, 12% sucrose, 5% corn syrup and 0.25% CMC.

The gradual reduction of the fat content of buttery foods resulted in proportional increase in moisture, protein, carbohydrate, ash, percentages as well as titratable acidity (TA)%, acid value (AV), peroxide value (PV), thiobarbituric acid (TBA), refractive index (RI), dynamic viscosity (DV), consistency coefficient (CC) and yield stress (YS). That led also to decrease in the caloric value (CV), cholesterol level (CL), pH value and oil separation index (OSI). Neither the microbiological nor the

organoleptical quality was influenced significantly by the lowering of the fat content, however, the body & texture scores heightened in this respect. The substitution of MF with PO reduced the CL and pH value while it increased the AV, PV, TBA, RI, DV, CC and YS. However, consistency & flavour scores were lowered due to the presence of PO in the product. During the 6 months of cold storage, TA, AV, PV, TBA, DV, CC and OSI of product increased while pH value, RI and organoleptic score decreased, regardless the levels of either fat, slendid or the substitution with PO. The dry matter %, CV, pH value, acetaldehyde % and water soluble nitrogen (WSN) % of yoghurt decreased, while the protein, ash, TA %, diacetyl, DV, CC, YS and count of lactic acid bacteria (LAB) increased as the fat content of yoghurt lowered. Maximum value of rheological parameters and LAB count were recorded at the 5th day of cold storage of yoghurt. Samples containing 2% fat and 0.15% slendid was sensory selected as good as the control containing 3% fat only followed by that of nil % fat and 0.1 % slendid. The reduction of the fat content was associated with increase in all rheological properties as well as the specific gravity and decrease in the freezing point of frozen yoghurt mix. While it led also to increase in the overrun and to weaken the melting resistance of the resultant frozen product. The samples of 2% fat supplemented with 0.1 or 0.15% slendid were superior to the control (3% fat). Therefore, slendid could be used successfully as fat mimetic in the manufacture of serial low calorie dairy products with a palatability near or sometimes better than the original-analogous one.

Key words: Low calorie, low fat, buttery foods, yoghurt, frozen yoghurt, slendid, palm oil, rheological parameters, chemical properties, physical properties.

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LIST OF ABBREVIATIONS

ACC	: acid cheese curd
AV	: acid value
AMF	: anhydrous milk fat
AOAC	: Association of Official Analytical Chemists
CV	: caloric value
cal	: calorie
cap	: capacity
CMC	: carboxy methylcellulose
CL	: cholesterol level
Cfu	: colony Forming unit
conc.	: concentration
CC	: consistency coefficient
CHD	: coronary heart disease
DDM	: dialkyl dihexadecymalonete
DM	: dry matter
DV	: dynamic viscosity
<i>eta</i>	: Egyptian Office for Trading & Agencies
EOSQC	: Egyptian Organization Standardization and Quality Control
EPG	: esterified propoxylated glycerols
FAO	: Food Agriculture Organization
Kcal	: kilo calorie
KPa	: kilò pascale
LAB	: lactic acid bacteria
Log	: logarithm
uL	: micro liter
MF	: milk fat
MSNF	: milk solids not fat
mg	: milligram
Min	: minute
M	: molar
NF	: nanofiltration
nm	: nanometer

NRC	: National Research Council
OSI	: oil separation index
OD	: optical density
PO	: palm oil
p.p.m.	: part per million
Pa	: pascale
PV	: peroxide value
RSM	: reconstituted skim milk
RI	: refractive index
rpm	: revolution per minute
SMP	: skim milk powder
SPSS	: Statistical Package for Social Science
<i>i.e</i>	: That means
TBA	: thiobarbituric acid
TA	: titratable acidity
TS	: total solids
TATCA	: Trialkoxytricarballate
UF-WPC	: ultrafiltration whey proteins concentrate
UF	: Ultrafiltration
v/v	: volume/volume
WSN	: water soluble nitrogen
wk	: week
w/w	: weight/ weight
WP	: wet proteins
YS	: yield stress

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