

( ) , ( )

**UF**

\*

( // : // : )

UF .

UF

ADV ( ) ( )  
) NPN PH4/6-SN ( )  
Excel MatLab ( )

Q<sub>10</sub> ADV TCA/SN TCA/TN  
SN/TN / / /

Q<sub>10</sub> :

Alborzi,

(2001)

(Mortazavi *et al.*, 1995)

(Afshar, 2004)

, ( )

)

(Hesari,

(

.2005)

.(Alizadeh, 2006)



( )

pH

CO2

.(Farahnoodi, 2002)

UF

$\beta$

UF

$\alpha_{s2}$

UF

.(Bech , 1993)

$$[(s) - (s_0)] = kt - kt_0$$

(

$$\ln(s) - \ln(s_0) = kt - kt_0$$

(

.(Boekel & Tijssens , 2001)

$$k = k_o \exp\left(\frac{-E_a}{RT}\right)$$

(

.(Gaya *et al.* 1990)

R (kJ/kg)

$E_a$

(K)

T

(8.314 kJ/kmol K)

1. Slurries

2. Encapsulated

... :

$E_a$

$Q_{10}$

$Q_{10}$

UF

$^{\circ}\text{C}$

$Q_{10} = e^{\left[ \frac{10 * E_a}{RT_1 T_2} \right]}$

(1997) Zorrilla & Rubiolo

$\alpha_s$

(2005) Sihufe *et al.*,

$\beta$

NaCl

KCl

( )

( ) / /

( )

kcal/gmol

$^{\circ}\text{C}$

(2003) Sihufe *et al.*

$\alpha_s$

( ) / /

kcal/gmol

( )

TCA

( )

UF

(1986) Nunez *et al.*

(ADV)

( )

UF

( )

$$ydata = x_1(xdata) + x_2 \quad ($$

$$ydata = x_1 \exp(x_2 \times xdata) \quad ($$

$$( ) \quad ydata = x_1 \exp(x_2 \times (xdata)^{x_3}) \quad ($$

A<sub>0</sub> E<sub>a</sub>

( )

ydata xdata  
x<sub>3</sub> x<sub>2</sub> x<sub>1</sub>

x<sub>2</sub> x<sub>1</sub>

( )

RMSE

LSQCURVEFIT

MATLAB

A<sub>0</sub>

W F<sub>0</sub> F<sub>0</sub> W

( ) ( )

A<sub>0</sub>

ADV SN/TN

(F<sub>0</sub>)

RMSE

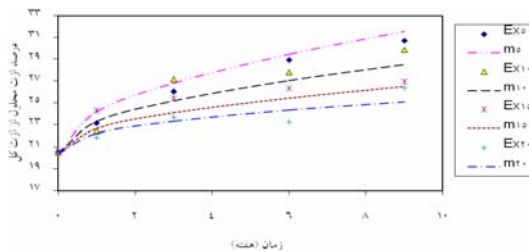
( )

1. Root mean square error

pH

/ ± / ± / / ± / / ± / / ± / (%)

X	X	X	X	X	X	X	Ea	SN/TN
/	/	/	/	/	/	/	A <sub>0</sub>	
/ ×	/	/	/ ×	/	/ ×	/	Ea	NPN/TN
/	/	/	/	/	/	/	A <sub>0</sub>	
/ ×	/	/	/ ×	/	/	/	Ea	NPN/SN
/	/	/	/	/	/	/	A <sub>0</sub>	
/	/	/	/	/	/	/ ×	Ea	ADV
/	/	/	/	/	/	/	A <sub>0</sub>	



RMSE -

ADV		NPN/SN		NPN/TN SN	
Ex	W	Ex	F1	Ex	F <sub>0</sub>
/	/	/	/	/	/
/	/	/	/	/	/
/	/	/	/	/	/
/	/	/	/	/	/

:Ex

:F1

:F<sub>0</sub>

:Ex

(

:m

:W

$E_a$

$Q_{10}$

( )

(2005) Sihufe *et al.*

NaCl

KCl

$\beta$

/ /

( / )

kcal/gmol °C

(Sihufe *et al.*,

/ /

$\alpha_s$

2003)

kcal/gmol

( / )

TCA/SN TCA/TN SN/TN

SN/TN / /

TCA/TN / /

TCA/SN / /

ADV

TCA/SN / /

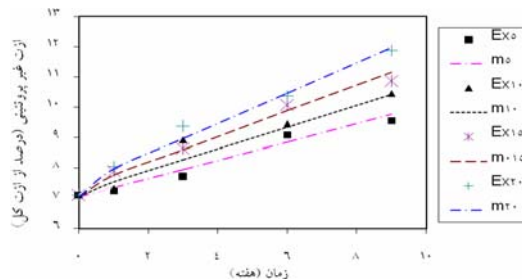
$Q_{10}$

( )

TCA ADV

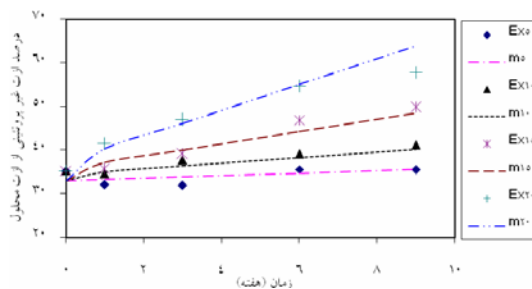
SN/TN

	ADV	TCA/TN	SN/TN	TCA/SN
$E_a$	'	'	'	'
$Q_{10}$	'	'	'	'

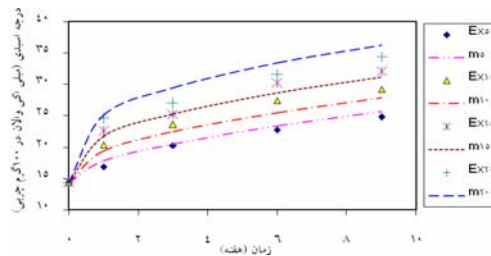


:Ex)

( :m



( :m :Ex)



:Ex)

( :m

	ADV	TCA/TN	SN/TN	TCA/SN
'	'	'	'	'
'	'	'	'	'
'	'	'	'	'

SN/TN

$X_1$

( )

(Castilloa *et al.*, 2006)

	: Q <sub>10</sub>				
(8.314 kJ/kmol K)	:R	Q <sub>10</sub>			
(K)	:T	SN/TN			
	: ADV		ADV	NPN/SN	NPN/TN
(%)	: NPN/TN				
(%)	: NPN/SN	SN/TN			
Root mean square error : RMSE					
(%)	: SN/TN		(kJ/kg)		:E <sub>a</sub>

## REFERENCES

- A.O.A.C. (1984). *Official Method of Analysis of Association of Analytical Chemists*, 14th ed., Published by Association of Official Analysis Chemists, INC., Virginia, USA.
- Afshar, S. (2004). *Survey the Effects of somatic cells on the physical and chemical properties of UF and traditional cheese*, M.Sc. thesis, Faculty of Agriculture, Tabriz University (In Farsi)
- Alborzi, S (2001). *Survey of effective factors in enhancing the hygienic quality of UF cheese with an emphasis on fungal contamination*, M.Sc. thesis, Faculty of Agriculture, Shiraz University (In Farsi)
- Alizadeh, M. (2006). *Optimization of the chemical and sensorial quality indices of Iranian white brine cheese using response surface methodology*. Ph. D. dissertation, University of Tehran, Iran.
- Bech, A. M. (1993). Characterizing ripening in UF-Cheese. *International Dairy Journal*, 3,329-342.
- Boekel M.A.J.S. & Tijskens L.M.M. (2001). Kinetic modelling. In Tijskens L.M.M., Hertog MLATM & Nicolai B.M. (Eds.), *Food Process Modelling*. CRC Press, New York.
- Castilloa, M., Luceya J.A., Wanga T. & Payne F.A. (2006). Effect of temperature and inoculum concentration on gel microstructure, permeability and syneresis kinetics. Cottage cheese-type gels. *International Dairy Journal*, 16, 153–16.
- Farahnoodi,F. (2002 ). Cheese technology, Iran Dairy Co. (in Farsi)
- Gaya, P., Medina, M., Rodriguez-Marin, M.A. & Nufiez, M. (1990). Accelerated ripening of ewes' milk Manchego cheese: the effect of elevated temperatures. *Journal of Dairy Science*, 73, 26-32.
- Hesari, J. (2005). *Effective factors on the kinetics of proteolysis of ultrafiltrated Feta cheese*. Ph. D. dissertation, University of Tehran, Iran.
- Kuchroo, C.N. & Fox, P.F. (1982). Soluble nitrogen in Cheddar cheese: comparison of extraction procedures. *Milchwissenschaft*, 37, 331-335.
- Mortazavi,A., Ghods Ruhani, M. & Juyandeh, H. (1995 ). *Dairy technology*, Mashad Yniversity (in Farsi)
- Nunez, M., Garcia-Aser, C., Rodriguez-Martin, M.A., Medina, M. & Gaya, P. (1986). The effect of ripening and cooking temperatures on proteolysis and lipolysis in Manchego cheese. *Food Chemistry*, 21, 115-123.
- Sihufe, G. A., Zorrilla, S. E., & Rubiolo, A. C. (2003). Casein degradation of Fynbo cheese salted with NaCl/KCl brine and ripened at various temperatures. *Journal of Food Science*, 68(1), 117–123.
- Sihufe, G. A., Zorrilla, S. E., & Rubiolo, A. C. (2005). Kinetics of Proteolysis of  $\beta$ -Casein during Ripening of Fynbo Cheese Salted with NaCl or NaCl/KCl and Ripened at Different Temperatures. *Journal of Food Science*, 68(1), 117–123.
- Zorrilla S.E., Rubiolo A.C. (1997). Kinetics of casein degradation during ripening of Fynbo cheese salted with NaCl/KCl brine. *Journal of Food Science*, 62(2), 386–9.