

**Supplementary Table S1.** The criteria used to determine sensory changes during refrigerated storage of the control and experimental groups of brined and dry-salted anchovies

Sensory Scoring Scale of the Salted Anchovy			
Appearance	Odour	Texture	Scores
Outer color is bright, white and pink flesh, no yellowing, skin shrunken in dry salted groups, flesh yellowish	Strong and characteristic anchovy odor and intense salt odor in dry-salted samples	Meat is firm and adherent to the backbone, firming of meat in dry salted groups	10-9 (Excellent)
The outer color is bright, the inner color is white and slightly yellowed, the flesh color is yellowish and brownish in dry-salted groups.	Decreased characteristic anchovy odor	Meat is hard and adherent to the backbone, firming and skin shrinkage in dry-salted groups	8-7 (Good)
Slight dulling of outer color, light yellowing of flesh with pinkish brown, dry-salted groups are predominantly brownish.	Weak characteristic anchovy odor, boiled milk or potato odor	The meat is slightly soft and easy to separate from the spine, in dry-salted groups the meat is firm and adhered to the spine	6-5 (Medium)
Outer color is dull and pale, flesh color is yellowish brown, browning in dry salted groups	Bitter and rancid odor similar to lactic acid and acetic acid	The meat is soft, and the spine separates immediately, with light watering in the dry-salted group, the meat loosens.	4 (Limit point for acceptability)
Outer color is fuzzy grayish, flesh color is dark yellow and brownish, dark brown color formation along the spine, lightening and clouding due to watering in dry salted groups	Intense bitterness and an ammonia or sulfurous odor	The meat is very soft, in the pickled samples, the meat is watered down, melted and dispersed by hand, in the dry-salted group there is melting of the meat and separation from the spine, flimsy	<4 (unacceptable)

**Supplementary Table S2.** The results of regression analysis between sensory values and chemical quality parameters (TVB-N, TBA and TMA) for the experimental group stored in a refrigerator

Sample type	TVB-N- Sensory	TBA- Sensory	TMA- Sensory
10%	R <sup>2</sup> = 0.84 y = -0.0418x + 8.2069	R <sup>2</sup> = 0.68 y = -0.087x + 0.9953	R <sup>2</sup> = 0.91 y = -0.9192x + 8.6758
15%	R <sup>2</sup> = 0.97 y = -8.4937x + 84.381	R <sup>2</sup> = 0.96 y = -0.2607x + 2.618	R <sup>2</sup> = 0.91 y = -0.4564x + 5.0108
20%	R <sup>2</sup> = 0.99 y = -5.865x + 63.253	R <sup>2</sup> = 0.94 y = -0.341x + 3.7032	R <sup>2</sup> = 0.92 y = -0.5537x + 6.1062
25%	R <sup>2</sup> = 0.90 y = -3.1302x + 41.706	R <sup>2</sup> = 0.63 y = -0.5395x + 7.0326	R <sup>2</sup> = 0.69 y = -0.4325x + 6.0139
30%	R <sup>2</sup> = 0.95 y = -7.7108x + 75.752	R <sup>2</sup> = 0.90 y = -0.9416x + 9.663	R <sup>2</sup> = 0.90 y = -0.6605x + 7.5784
DS	R <sup>2</sup> = 0.97 y = -4.4566x + 47.541	R <sup>2</sup> = 0.93 y = -1.2847x + 13.031	R <sup>2</sup> = 0.98 y = -0.6992x + 7.1703

TVB-N: Total Volatile Base-Nitrogen, TBA: Thiobarbituric acid, TMA: trimethylamine. DS:  
Dry-salted.

**Supplementary Table S3.** The results of regression analysis between sensory values and chemical quality parameters (TVB-N, TBA and TMA) for the control group stored in a refrigerator

Sample type	TVB-N- Sensory	TBA- Sensory	TMA- Sensory
10%	R <sup>2</sup> =0.90 y=-5.843x+63.867	R <sup>2</sup> =0.99 y=-0.011x+0.478	R <sup>2</sup> =0.95 y=-0.448x+5.365
15%	R <sup>2</sup> =0.97 y=-4.411x+50.859	R <sup>2</sup> =0.87 y=-0.201x+2.121	R <sup>2</sup> =0.95 y=-0.869x+9.188
20%	R <sup>2</sup> =0.97 y=-4.300x+52.635	R <sup>2</sup> =0.96 y=-0.570x+5.705	R <sup>2</sup> =0.99 y=-0.813x+9.157
25%	R <sup>2</sup> =0.92 y=-4.015x+51.964	R <sup>2</sup> =0.92 y=-0.632x+6.815	R <sup>2</sup> =0.83 y=-0.461x+6.194
30%	R <sup>2</sup> =0.98 y=-4.370x+53.487	R <sup>2</sup> =0.97 y=-1.013x+10.784	R <sup>2</sup> =0.93 y=-0.661x+7.815
DS	R <sup>2</sup> =0.97 y=-2.803x+38.314	R <sup>2</sup> =0.93 y=-1.019x+11.114	R <sup>2</sup> =0.90 y=-0.486x+5.918

TVB-N: Total Volatile Base-Nitrogen, TBA: Thiobarbituric acid, TMA: trimethylamine. DS:

Dry salted.

**Supplementary Table S4.** The results of regression analysis among the values of salt %, moisture % and water activity for the control group during storage in a refrigerator ( $4 \pm 1$  °C)

Sample type	Salt % - $a_w$	Salt % - Moisture%	Moisture% - $a_w$
10%	$R^2=0.99$ $y=-2.2408x+171.33$	$R^2=0.73$ $y=-0.0079x+1.0074$	$R^2=0.70$ $y=0.0175x-0.3303$
15%	$R^2=0.99$ $y=-1.3205x+101.08$	$R^2=0.99$ $y=-0.0076x+1.0031$	$R^2=0.97$ $y=0.0099x+0.243$
20%	$R^2=0.99$ $y=-1.4079x+107.79$	$R^2=0.93$ $y=-0.0095x+1.0157$	$R^2=0.92$ $y=0.0133x+0.0061$
25%	$R^2=0.98$ $y=-1.3071x+99.777$	$R^2=0.93$ $y=-0.0095x+1.0076$	$R^2=0.93$ $y=0.0125x+0.0575$
30%	$R^2=0.98$ $y=-1.1322x+86.393$	$R^2=0.98$ $y=-0.0083x+0.993$	$R^2=0.99$ $y=0.0096x+0.2649$
DS	$R^2=0.99$ $y=-0.8827x+67.579$	$R^2=0.90$ $y=-0.0105x+0.9728$	$R^2=0.92$ $y=0.0094x+0.2547$

C: Control group, FM: Experimental group,  $a_w$ : water activity DS: Dry-salted.

**Supplementary Table S5.** The results of regression analysis among the values of salt %, moisture % and water activity for the experimental group during storage in a refrigerator ( $4 \pm 1^{\circ}\text{C}$ )

Sample type	Salt % - $a_w$	Salt % - Moisture%	Moisture % - $a_w$
10%	$R^2 = 0.96$ $y = -0.0068x + 1.0016$	$R^2 = 0.86$ $y = 0.5588x + 75.852$	$R^2 = 0.78$ $y = -0.0103x + 1.7733$
15%	$R^2 = 0.96$ $y = -0.0092x + 1.0024$	$R^2 = 0.76$ $y = -1.0874x + 76.844$	$R^2 = 0.86$ $y = 0.007x + 0.4522$
20%	$R^2 = 0.98$ $y = -0.0104x + 1.0031$	$R^2 = 0.96$ $y = -1.1358x + 76.885$	$R^2 = 0.80$ $y = 0.0045x + 0.6013$
25%	$R^2 = 0.85$ $y = -0.0086x + 0.9913$	$R^2 = 0.71$ $y = -1.0126x + 75$	$R^2 = 0.82$ $y = 0.0033x + 0.664$
30%	$R^2 = 0.85$ $y = -0.0086x + 0.9913$	$R^2 = 0.69$ $y = -1.0047x + 74.476$	$R^2 = 0.80$ $y = 0.0031x + 0.6735$
DS	$R^2 = 0.99$ $y = -0.0122x + 1.0038$	$R^2 = 0.97$ $y = -1.0106x + 76.721$	$R^2 = 0.98$ $y = 0.0119x + 0.0899$

C: Control group, FM: Experimental group,  $a_w$ : water activity DS: Dry salted.



	%	FM	a,C,2	b,C,2	c,C,2	d,C,1	e,B,2	f,A,2								
25 %	C	a,D,1	b,D,1	c,C,1	d,C,1	e,B,1	f,B,1	g,B,1	h,A,1							
	FM	a,D,2	b,C,2	c,D,2	d,D,2	e,C,2	f,B,2	g,A,2	h,A,2	i,A	j,A					
30 %	C	a,E,1	b,E,1	c,D,1	d,D,1	e,C,1	f,C,1	g,C,1	h,B,1	i,A,1	j,A,1	k,A,1	l,A			
	FM	a,E,2	b,D,2	c,E,2	d,E,2	e,D,2	f,C,2	g,B,2	h,B,2	i,B,2	j,B,2	k,A,2				
DS	C	a,E,1	b,E,1	c,D,1	d,E,1	e,D,1	f,D,1	g,D,1	h,C,1	i,B,1	j,B,1	k,B,1	l,B,1	m,1		
	FM	a,E,2	b,D,2	b,F,2	c,E,2	c,E,2	d,D,2	e,C,2	f,C,2	g,C,2	h,C,2	i,B,2	j,2	k,1	1	

TBA (mg MA/kg)	SC	ST	Storage Time													
			1W	2W	1M	2M	3M	4M	5M	6M	7M	8M	9M	10M	11M	12M
10 %	C	a,A,1	a,A,1													
	FM	a,A,2	b,A,2	c,A	d,A											
15 %	C	a,B,1	b,B,1	c,A,1	d,A,1											
	FM	a,B,1	b,B,1	c,B,1	d,B,1	e,A										
20 %	C	a,C,1	b,C,1	c,B,1	d,B,1	e,A,1	f,A,1	g,A								
	FM	a,C,2	b,C,1	c,C,1	d,C,2	e,C,2	f,B,2	g,A,2	h,A,2	i,A	j,A					
25 %	C	a,D,1	b,D,1	c,C,1	d,C,1	e,B,1	f,B,1	g,B,1	h,A,1							
	FM	a,D,2	b,D,2	c,D,2	d,D,2	e,C,2	f,B,2	g,A,2	h,A,2	i,A	j,A					
30 %	C	a,E,1	b,E,1	c,D,1	d,D,1	e,C,1	f,C,1	g,C,1	h,B,1	i,A,1	j,A,1	k,A,1				
	FM	a,E,1	b,E,2	c,E,1	d,E,1	e,D,1	f,C,1	g,B,1	h,B,2	i,B,2	j,B,2	k,A,2				
DS	C	a,F,1	b,F,1	c,E,1	d,E,1	e,D,1	f,D,1	g,C,1	h,C,1	i,B,1	j,B,1	k,B,1	l,1	m,1		
	FM	a,F,1	b,F,2	c,F,1	d,F,1	e,E,2	f,D,2	g,C,2	h,C,1	i,C,1	j,C,1	k,B,1	l,1	m,2	n	

TMA (g/100g)	SC	ST	Storage Time													
			1W	2W	1M	2M	3M	4M	5M	6M	7M	8M	9M	10M	11M	12M
10 %	C	a,A,1	b,A,1													
	FM	a,A,2	b,A,2	c,A	d,A											
15 %	C	a,B,1	b,B,1	c,A,1	c,A,1											
	FM	a,B,2	a,B,2	b,B,2	b,B,2	c,A										
20 %	C	a,C,1	b,C,1	c,B,1	c,B,1	c,A,1	c,A,1	c,A								
	FM	a,C,2	a,C,2	a,C,2	a,C,2	a,B,2	a,A,2									
25 %	C	a,D,1	b,D,1	c,C,1	c,C,1	d,B,1	d,B,1	d,B,1	d,A,1							
	FM	a,C,2	a,C,2	a,D,2	a,D,2	a,C,2	a,B,2	a,A,2	b,A	b,A						
30 %	C	a,E,1	b,E,1	c,D,1	c,D,1	c,C,1	c,C,1	c,C,1	c,B,1	c,A,1	c,A,1	c,A,1	c,A			
	FM	a,D,2	b,C,2	b,D,2	b,D,2	b,C,2	b,B,2	b,B,2	b,B,2	b,A,1	a,A,1	a,A,1	a,A,2			
DS	C	a,F,1	b,F,1	c,E,1	d,E,1	c,D,1	c,D,1	c,D,1	c,C,1	c,B,1	c,B,1	c,B,1	c,B,1	c,1		
	FM	a,C,2	a,D,2	a,D,2	a,D,2	a,C,2	a,C,1	a,C,2	a,C,2	a,B,1	a,B,1	a,B,1	a,B,1	a,2	a	

pH	SC	ST	Storage Time													
			1W	2W	1M	2M	3M	4M	5M	6M	7M	8M	9M	10M	11M	12M
10 %	C	a,A,1	b,A,1													
	FM	a,A,2	b,A,2	c,A	d,A											
15 %	C	a,B,1	b,B,1	c,A,1	c,A,1											
	FM	a,B,2	a,B,2	b,B,2	b,B,2	c,A										
20 %	C	a,C,1	b,C,1	a,B,1	c,B,1	d,A,1	e,A,1	f,A								
	FM	a,C,2	b,C,2	a,C,2	c,C,2	d,B,2	e,A,2									
25 %	C	a,C,1	a,D,1	a,C,1	b,C,1	c,B,1	d,B,1	e,B,1	f,A,1							
	FM	a,D,2	b,D,2	c,D,2	d,D,2	e,C,2	f,B,2	g,A,2	h,A,2	i,A	j,A					
30 %	C	a,D,1	b,E,1	b,C,1	a,D,1	a,C,1	c,C,1	c,C,1	c,C,1	c,B,1	d,A,1	e,A,1	e,A,1	f,A		
	FM	a,E,2	b,E,2	b,E,2	c,E,2	a,D,2	d,C,2	e,B,2	f,B,2	g,B,2	h,B,2	i,A,2				
DS	C	a,D,1	a,F,1	a,D,1	a,E,1	a,C,1	b,D,1	b,D,1	c,C,1	a,B,1	b,B,1	c,B,1	c,B,1	c,1		
	FM	a,F,2	b,D,2	a,F,2	c,F,2	d,E,2	d,C,2	e,B,2	e,C,2	f,C,2	g,C,2	h,B,2	h,2	f,2	f	

	SC	ST	Storage Time												
			1W	2W	1M	2M	3M	4M	5M	6M	7M	8M	9M	10M	11M
10 %	C	a,A,1	b,A,1												
	FM	a,A,2	b,A,2	a,A	a,A										
15 %	C	a,B,1	b,B,1	c,A,1	d,A,1										
	FM	a,A,2	a,B,2	a,B,2	a,B,2	a,A									
20 %	C	a,C,1	b,C,1	c,B,1	d,B,1	e,A,1	e,A,1	e,A							
	FM	a,C,2	b,C,2	b,C,2	c,C,2	c,B,2	c,A,2								
25 %	C	a,D,1	b,D,1	c,C,1	d,C,1	e,B,1	f,B,1	f,B,1	e,A,1						
	FM	a,D,2	a,D,2	a,D,2	a,D,2	a,C,1	a,B,2	a,A,1	a,A,2	a,A	b,A				
30 %	C	a,E,1	b,E,1	c,D,1	c,D,1	c,C,1	d,C,1	e,C,1	c,B,1	d,A,1	c,A,1	c,A,1	c,A		
	FM	a,E,2	a,D,2	b,E,2	b,E,2	b,D,2	a,C,2	b,B,2	b,B,2	a,B,2	c,B,2	d,A,2			
DS	C	a,F,1	b,F,1	c,E,1	c,E,1	c,D,1	c,D,1	c,D,1	c,C,1	c,B,1	c,B,1	c,B,1	c,B,1	c,1	
	FM	a,F,2	b,E,2	c,F,2	c,E,2	c,D,2	c,D,2	c,C,2	c,C,2	c,C,2	c,C,2	c,C,2	c,C,2	c,2	d,2

	SC	ST	Storage Time												
			1W	2W	1M	2M	3M	4M	5M	6M	7M	8M	9M	10M	11M
10 %	C	a,A,1	b,A,1												
	FM	a,A,2	b,A,2	b,A	c,A										
15 %	C	a,B,1	b,B,1	c,A,1	d,A,1										
	FM	a,B,2	b,B,2	b,B,1	c,B,2	c,A									
20 %	C	a,C,1	b,B,1	c,B,1	d,B,1	e,A,1	d,A,1	e,A							
	FM	a,C,2	b,C,1	b,C,2	b,C,2	b,B,2	b,A,2								
25 %	C	a,D,1	b,C,1	c,C,1	c,C,1	d,B,1	e,B,1	e,B,1	e,A,1						
	FM	a,D,2	a,D,2	a,D,1	a,D,1	a,C,2	b,B,2	b,A,1	a,A,2	b,A	b,A				
30 %	C	a,E,1	b,D,1	c,D,1	c,D,1	c,C,1	c,C,1	c,C,1	c,B,1	c,A,1	c,A,1	c,A,1	c,A		
	FM	a,E,2	b,E,2	c,D,2	c,D,2	c,C,2	c,B,2	c,A,2	c,A,2	d,B,2	e,A,1	f,A,1			
DS	C	a,F,1	b,E,1	c,E,1	d,E,1	c,D,1	c,D,1	c,D,1	c,C,1	c,B,1	c,B,1	c,B,1	c,B,1	c,1	
	FM	a,F,2	b,E,2	b,E,2	b,E,2	b,D,2	b,C,2	b,B,2	b,B,2	b,C,2	b,B,2	b,B,2	b,B,2	b,2	b,2

	SC	ST	Storage Time												
			1W	2W	1M	2M	3M	4M	5M	6M	7M	8M	9M	10M	11M
10 %	C	a,A,1	b,A,1												
	FM	a,A,2	a,A,2	a,A	b,A										
15 %	C	a,B,1	b,B,1	c,A,1	d,A,1										
	FM	a,B,2	b,B,2	c,B,1	b,B,1	c,A									
20 %	C	a,C,1	b,C,1	c,B,2	d,B,2	e,A,1	e,A,1	e,A							
	FM	a,C,2	b,C,2	c,C,1	d,C,2	b,B,2	d,A,2								
25 %	C	a,D,1	b,D,1	c,C,1	c,C,1	c,B,1	d,B,1	c,B,1	c,A,1						
	FM	a,D,2	b,D,2	c,D,2	c,D,2	c,C,2	c,B,2	b,A,2	b,A,2	b,A	d,A				
30 %	C	a,E,1	b,E,1	c,D,1	c,D,1	c,C,1	d,C,1	d,C,1	d,B,1	d,A,1	d,A,1	d,A,1	d,A,1	d,A	
	FM	a,E,2	b,E,2	c,E,1	d,E,1	e,C,2	e,B,1	e,B,2	e,B,1	d,A,1	d,B,1	b,A,2			
DS	C	a,F,1	b,F,1	c,E,1	d,E,1	c,D,1	c,D,1	d,D,1	c,C,1	c,B,1	d,B,1	c,B,1	c,B,1	c,1	
	FM	a,F,2	b,F,2	c,F,1	d,F,2	d,D,1	e,C,2	f,C,2	g,C,2	h,C,2	i,C,2	j,C,2	k,C,2	l	

The different lowercase letters (a,b,c, etc) within the same column represent statistical differences depending on time within the same brine concentration and dry salting method for each group (control and experimental group)  $p<0.05$ . The different uppercase letters (A,B,C, etc) within the same column represent statistical differences amongst the different brine concentrations within the same brine concentration and dry salting method for each group (control and experimental) ( $p<0.05$ ). The different superscript numbers (1,2) in front of data within the same column represent statistical differences between control and experimental groups for the same brine concentration and dry salting method for the same storage time ( $p<0.05$ ). M: month, W: week, DS: Dry salted, C: Control group, FM: experimental group (raw materials previously frozen and thawed). SC: Salt Concentration, ST: Sample type