

**APPENDIX****ADDITIONAL RESULTS**

**Table 20** F-value of analysis of variance for physical properties of Thai indigenous chicken muscles as influence by age and rearing system

Factors	Shear		Cooking loss	L*	a*	b*	Fiber diameter	Sacomere length
	Raw	Cooked						
<i>Pectoralis m.</i>								
System	1.592 <sup>ns</sup>	11.476***	0.548 <sup>ns</sup>	13.711***	6.097*	0.223 <sup>ns</sup>	0.013 <sup>ns</sup>	11.955***
Age	71.728***	47.897***	0.381 <sup>ns</sup>	0.004 <sup>ns</sup>	0.016 <sup>ns</sup>	1.315 <sup>ns</sup>	44.153***	31.692***
System*Age	0.956 <sup>ns</sup>	3.296*	1.345 <sup>ns</sup>	1.551 <sup>ns</sup>	4.744*	0.411 <sup>ns</sup>	0.279 <sup>ns</sup>	6.397***
<i>Biceps femoris m.</i>								
System	3.377 <sup>ns</sup>	2.826 <sup>ns</sup>	0.318 <sup>ns</sup>	0.827 <sup>ns</sup>	31.552***	4.047*	6.125*	0.544 <sup>ns</sup>
Age	0.103 <sup>ns</sup>	3.819*	2.063 <sup>ns</sup>	0.590 <sup>ns</sup>	10.382***	6.789**	68.146***	4.391*
System*Age	0.273 <sup>ns</sup>	0.776 <sup>ns</sup>	0.952 <sup>ns</sup>	3.595*	4.565*	12.414***	103.532***	6.279**

**Table 21** F-value of analysis of variance for chemical properties of Thai indigenous chicken muscles as influence by age and rearing system

Factors	Moisture	Protein	Fat	Ash	Total collagen	Soluble collagen
<i>Pectoralis m.</i>						
System	0.001 <sup>ns</sup>	1.852 <sup>ns</sup>	5.532*	1.189 <sup>ns</sup>	0.005 <sup>ns</sup>	0.382 <sup>ns</sup>
Age	4.370*	7.185*	17.928 <sup>ns</sup>	0.422 <sup>ns</sup>	0.565 <sup>ns</sup>	16.382***
System*Age	1.407 <sup>ns</sup>	3.630 <sup>ns</sup>	20.588 <sup>ns</sup>	0.838 <sup>ns</sup>	0.496 <sup>ns</sup>	0.165 <sup>ns</sup>
<i>Biceps femoris m.</i>						
System	1.228 <sup>ns</sup>	2.813 <sup>ns</sup>	7.091*	21.644***	6.308*	0.011 <sup>ns</sup>
Age	9.301**	19.503***	2.637 <sup>ns</sup>	29.616***	15.119***	43.192***
System*Age	1.930 <sup>ns</sup>	4.222*	0.185 <sup>ns</sup>	28.060***	1.159 <sup>ns</sup>	0.924 <sup>ns</sup>

**Table 22** Changes in total collagen and soluble collagen of thermal processed spent hen muscles in Tom Yum soup during storage at room temperature (25-30°C)

Storage time (months)	Total collagen (mg/g muscle)		Soluble collagen (% of total collagen)	
	<i>Pectoralis m.</i>	<i>Biceps femoris m.</i>	<i>Pectoralis m.</i>	<i>Biceps femoris m.</i>
0	5.99 ± 0.41 <sup>a</sup>	13.43 ± 1.04 <sup>a</sup>	39.36 ± 1.96 <sup>c</sup>	29.17 ± 2.87 <sup>c</sup>
0.5	2.50 ± 0.91 <sup>c</sup>	6.31 ± 1.20 <sup>c</sup>	58.97 ± 7.50 <sup>a</sup>	48.38 ± 6.06 <sup>a</sup>
1	5.95 ± 1.60 <sup>a</sup>	10.24 ± 1.33 <sup>b</sup>	31.62 ± 5.90 <sup>cd</sup>	37.41 ± 8.72 <sup>bc</sup>
2	7.01 ± 0.55 <sup>a</sup>	7.73 ± 2.63 <sup>c</sup>	26.39 ± 3.12 <sup>d</sup>	32.91 ± 6.76 <sup>bc</sup>
4	4.28 ± 0.74 <sup>b</sup>	10.82 ± 0.26 <sup>b</sup>	49.42 ± 2.38 <sup>b</sup>	42.01 ± 3.18 <sup>ab</sup>
6	6.16 ± 0.30 <sup>a</sup>	11.73 ± 0.49 <sup>ab</sup>	35.98 ± 7.37 <sup>c</sup>	34.34 ± 0.53 <sup>bc</sup>

Note: Mean ± SD of three determinations

Different superscripts in the same column indicate significant differences ( $p < 0.05$ ).

**Table 23** Changes in pH thermal processed spent hen muscles in Tom Yum soup during storage at room temperature (25-30°C)

Storage time (months)	pH of meat	
	<i>Pectoralis m.</i>	<i>Biceps femoris m.</i>
0	4.84 ± 0.01 <sup>c</sup>	5.18 ± 0.02 <sup>c</sup>
0.5	4.98 ± 0.04 <sup>b</sup>	5.23 ± 0.04 <sup>b</sup>
1	4.88 ± 0.07 <sup>c</sup>	5.17 ± 0.03 <sup>c</sup>
2	5.01 ± 0.01 <sup>b</sup>	5.25 ± 0.01 <sup>b</sup>
4	4.74 ± 0.05 <sup>d</sup>	4.99 ± 0.02 <sup>d</sup>
6	5.37 ± 0.02 <sup>a</sup>	5.47 ± 0.02 <sup>a</sup>

Note: Mean ± SD of three determinations.

Different superscripts in the same column indicate significant differences ( $p < 0.05$ ).

**Table 24** Changes in weight loss of thermal processed spent hen muscles in Tom Yum soup during storage at room temperature (25-30°C)

Storage time (months)	Weight loss (%)	
	<i>Pectoralis m.</i>	<i>Biceps femoris m.</i>
0	38.91 ± 2.67 <sup>b</sup>	37.40 ± 4.20 <sup>c</sup>
0.5	40.54 ± 1.83 <sup>b</sup>	40.58 ± 6.15 <sup>c</sup>
1	47.38 ± 0.52 <sup>b</sup>	48.18 ± 2.56 <sup>ab</sup>
2	46.49 ± 1.70 <sup>a</sup>	51.42 ± 1.60 <sup>a</sup>
4	39.90 ± 1.93 <sup>a</sup>	41.62 ± 6.04 <sup>bc</sup>
6	47.40 ± 4.14 <sup>a</sup>	50.03 ± 1.64 <sup>a</sup>

Note: Mean ± SD of three determinations.

Different superscripts in the same column indicate significant differences ( $p < 0.05$ ).

**Table 25** Changes in fiber diameter of thermal processed spent hen muscles in Tom Yum soup during storage at room temperature (25-30°C)

Storage time (months)	Fiber diameter (μm)	
	<i>Pectoralis m.</i>	<i>Biceps femoris m.</i>
0	26.72 ± 4.09 <sup>c</sup>	33.47 ± 2.30 <sup>d</sup>
0.5	25.01 ± 3.39 <sup>d</sup>	35.50 ± 3.77 <sup>bc</sup>
1	32.75 ± 2.50 <sup>b</sup>	35.23 ± 2.52 <sup>bcd</sup>
2	31.45 ± 2.14 <sup>b</sup>	40.01 ± 4.87 <sup>a</sup>
4	31.18 ± 2.71 <sup>b</sup>	36.97 ± 3.40 <sup>b</sup>
6	40.03 ± 3.16 <sup>a</sup>	34.32 ± 2.91 <sup>cd</sup>

Note: Mean ± SD of three determinations.

Different superscripts in the same column indicate significant differences ( $p < 0.05$ ).

**Table 26** Changes in shear force values of thermal processed spent hen muscles in Tom Yum soup during storage at room temperature (25-30°C)

Storage time (months)	Shear value (kg)	
	<i>Pectoralis m.</i>	<i>Biceps femoris m.</i>
0	3.62 ± 1.46 <sup>c</sup>	4.29 ± 0.99 <sup>c</sup>
0.5	3.93 ± 1.27 <sup>bc</sup>	6.17 ± 1.12 <sup>b</sup>
1	4.61 ± 1.25 <sup>ab</sup>	6.26 ± 0.87 <sup>b</sup>
2	4.53 ± 0.88 <sup>ab</sup>	5.65 ± 1.03 <sup>b</sup>
4	4.18 ± 1.43 <sup>abc</sup>	5.88 ± 1.27 <sup>b</sup>
6	4.96 ± 1.46 <sup>a</sup>	7.08 ± 1.09 <sup>a</sup>

Note: Mean ± SD of three determinations.

Different superscripts in the same column indicate significant differences ( $p < 0.05$ ).

**Table 27** Changes in L\*, a\* and b\* values of thermal processed spent hen muscles in Tom Yum soup during storage at room temperature (25-30°C)

Storage time (months)	L*	
	<i>Pectoralis m.</i>	<i>Biceps femoris m.</i>
0	66.90 ± 4.96 <sup>bc</sup>	65.97 ± 4.20 <sup>a</sup>
0.5	69.34 ± 3.20 <sup>a</sup>	63.69 ± 2.92 <sup>b</sup>
1	67.52 ± 3.30 <sup>abc</sup>	63.31 ± 2.84 <sup>b</sup>
2	68.28 ± 4.94 <sup>ab</sup>	62.44 ± 2.05 <sup>bc</sup>
4	67.10 ± 3.95 <sup>bc</sup>	62.59 ± 2.94 <sup>bc</sup>
6	65.56 ± 3.55 <sup>c</sup>	61.04 ± 2.34 <sup>c</sup>

Table 27 (Continued)

Storage time (months)	a*	
	<i>Pectoralis m.</i>	<i>Biceps femoris m.</i>
0	2.69 ± 0.60 <sup>e</sup>	3.15 ± 0.91 <sup>e</sup>
0.5	4.26 ± 0.61 <sup>d</sup>	3.67 ± 0.62 <sup>d</sup>
1	4.54 ± 0.54 <sup>d</sup>	3.65 ± 0.55 <sup>d</sup>
2	4.89 ± 0.67 <sup>c</sup>	4.16 ± 0.50 <sup>c</sup>
4	5.34 ± 0.52 <sup>b</sup>	4.75 ± 0.67 <sup>b</sup>
6	6.18 ± 0.69 <sup>a</sup>	5.14 ± 0.60 <sup>a</sup>

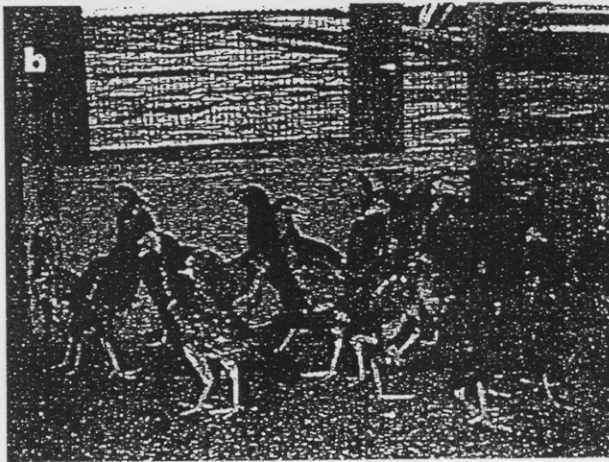
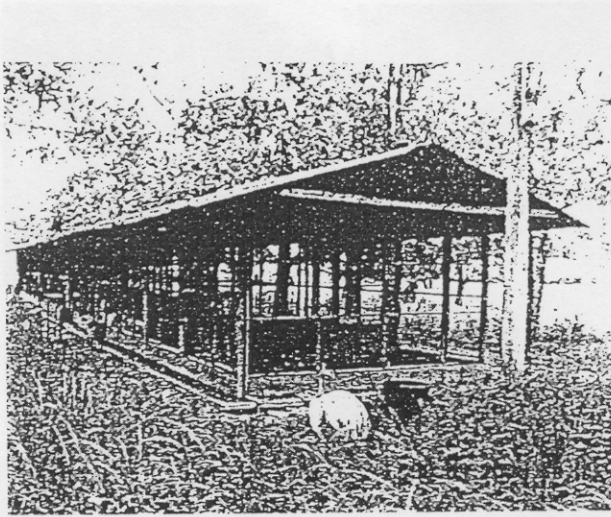
Storage time (months)	b*	
	<i>Pectoralis m.</i>	<i>Biceps femoris m.</i>
0	18.20 ± 2.34 <sup>c</sup>	18.42 ± 2.20 <sup>a</sup>
0.5	19.48 ± 2.64 <sup>b</sup>	16.67 ± 1.94 <sup>c</sup>
1	19.96 ± 2.73 <sup>ab</sup>	16.79 ± 1.60 <sup>c</sup>
2	20.49 ± 2.29 <sup>ab</sup>	17.15 ± 2.16 <sup>bc</sup>
4	20.68 ± 1.58 <sup>ab</sup>	18.20 ± 1.85 <sup>a</sup>
6	21.26 ± 1.90 <sup>a</sup>	17.93 ± 1.77 <sup>ab</sup>

Note: Mean ± SD of three determinations.

Different superscripts in the same column indicate significant differences ( $p < 0.05$ ).

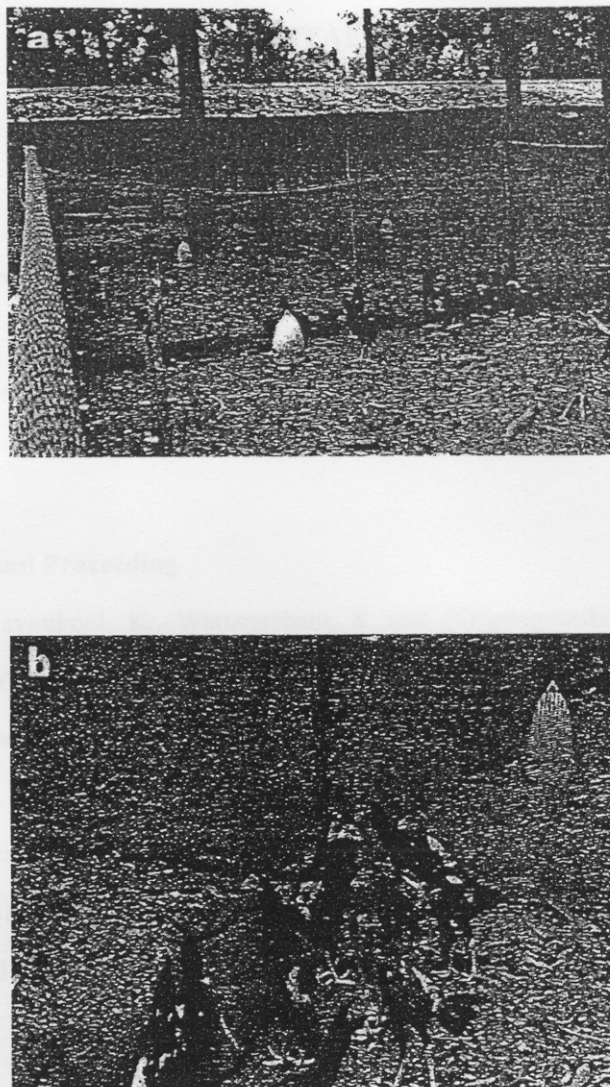
**APPENDIX**

**ADDITIONAL FIGURES**



**Figure 17** Intensive production system where chickens were kept in house and provided concentrated feeds: (a) outside of chicken's house and (b) inside of chicken's house which divided into 12 blocks (23 chickens/block).





**Figure 18** Extensive production system where allowed to scavenge on natural food around the homestead (18 meter squares) during the day and supplemented with concentrated feeds in the evening when they came back to roost and sheltered at night; (a) outside of chicken's house and; (b) group of chicken scavenged on nature food in their homestead (12 blocks x 23 chickens).