Supplementary Materials

1. Total aerobic bacteria (TAB): Estimated shelf-life 12.2 days
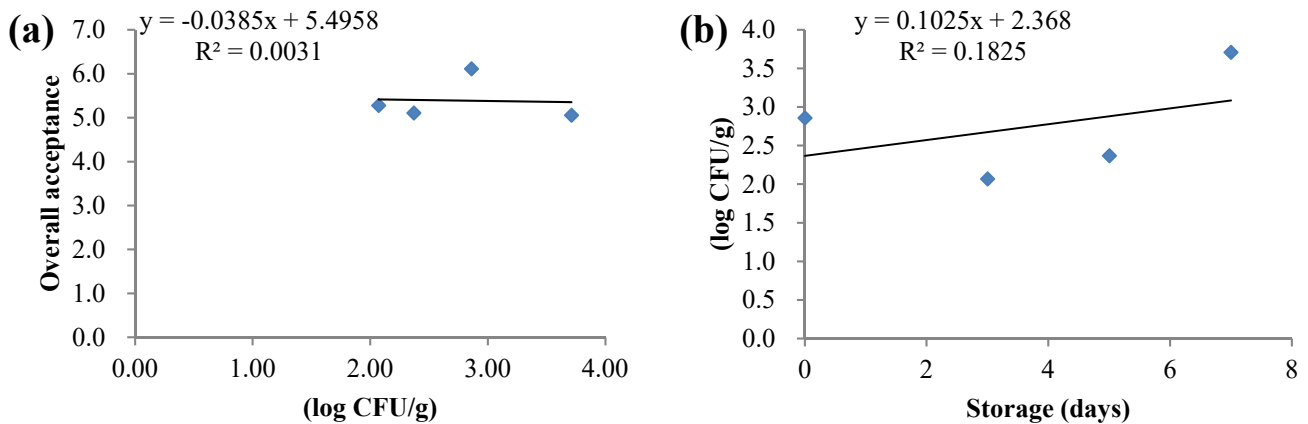

$y = 0.2155x + 4.3768$
$R^2 = 0.9513$
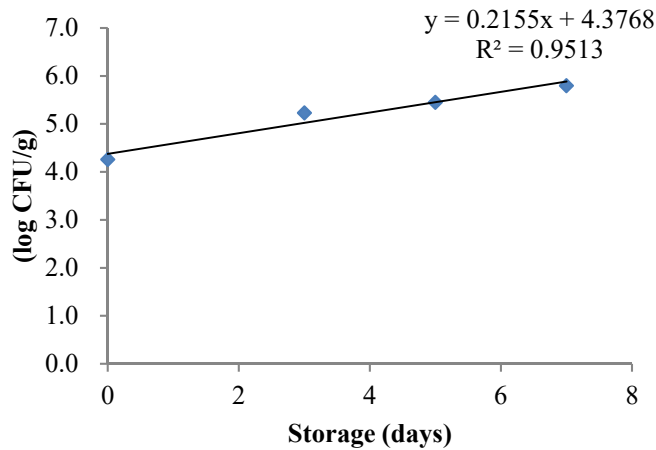
Fig. 1. Regression equation for estimated shelf-life (days) of wrap-packaged dry-aged beef based on total aerobic bacteria count (log CFU/g).

How calculated:
1) $y = 7$ (legal standard from Ministry of Food and Drug Safety).
2) substitute 7 (y) to the formula ($y = 0.2155x + 4.3768$) and calculate estimated shelf-life (x).

2. Mold: Estimated shelf-life 102.6 days

(a) $y = -0.0385x + 5.4958$
$R^2 = 0.0031$

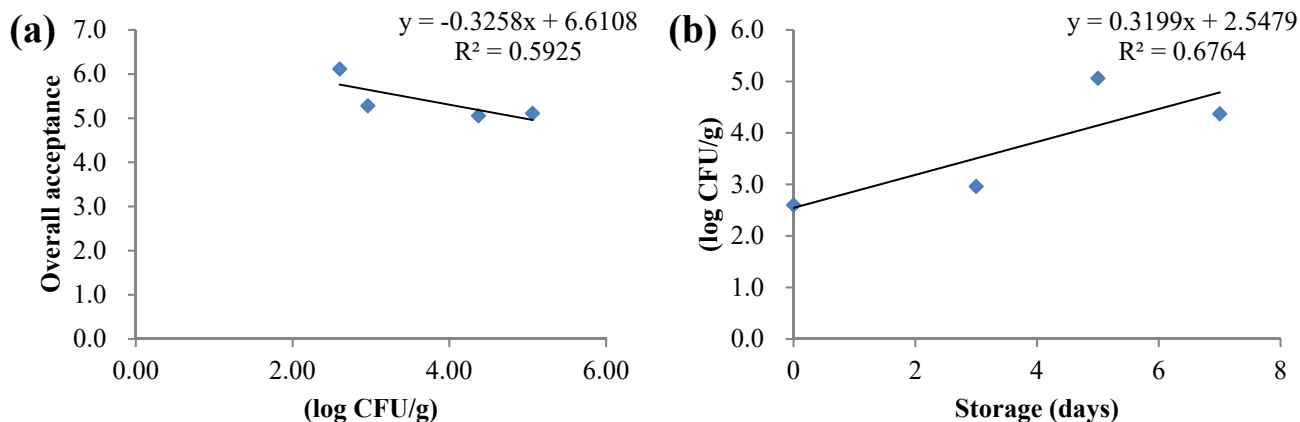**(b)** $y = 0.1025x + 2.368$
$R^2 = 0.1825$

Fig. 2. Regression equation for (a) quality limit (using overall acceptance, 5 considered as acceptable) and (b) estimated shelf-life (days) of wrap-packaged dry-aged beef based on mold count (log CFU/g).

How calculated:
1) $y = 12.9$ (see Fig. 2a).
2) substitute 12.9 (y) to the formula ($y = 0.1025x + 2.368$) and calculate estimated shelf-life (x).

3. Yeast: Estimated shelf-life 7.5 days

(a) y = -0.3258x + 6.6108
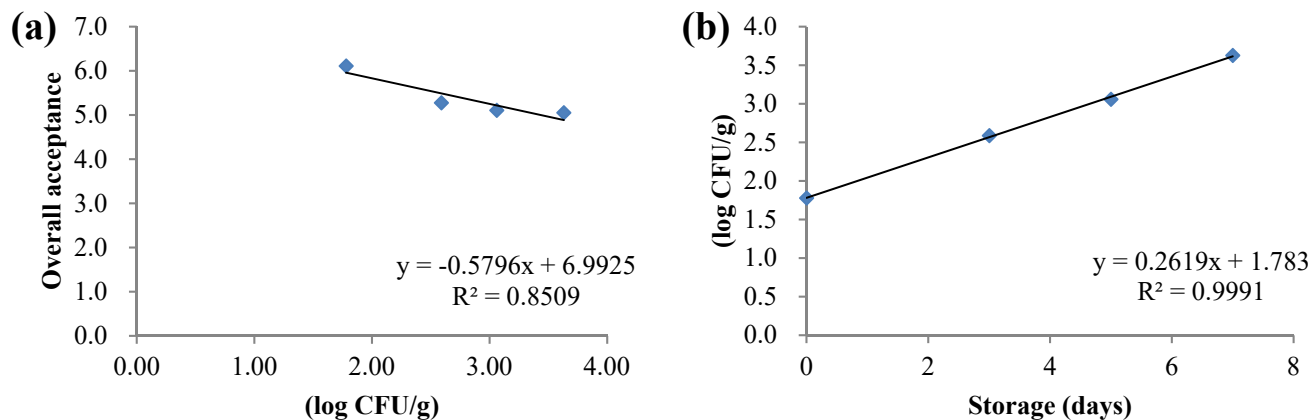R² = 0.5925

(b) y = 0.3199x + 2.5479
R² = 0.6764

Fig. 3. Regression equation for (a) quality limit (using overall acceptance, 5 considered as acceptable) and (b) estimated shelf-life (days) of wrap-packaged dry-aged beef based on yeast count (log CFU/g).

How calculated:
1) y = 4.9 (see Fig. 3a).
2) substitute 4.9 (y) to the formula (y = 0.3199x + 2.5479) and calculate estimated shelf-life (x).

4. Lactic acid bacteria (LAB): Estimated shelf-life 6.3 days

(a) y = -0.5796x + 6.9925
R² = 0.8509

(b) y = 0.2619x + 1.783
R² = 0.9991

Fig. 4. Regression equation for (a) quality limit (using overall acceptance, 5 considered as acceptable) and (b) estimated shelf-life (days) of wrap-packaged dry-aged beef based on lactic acid bacteria count (log CFU/g).

How calculated:
1) y = 3.4 (see Fig. 4a).
2) substitute 3.4 (y) to the formula (y = 0.2619x + 1.7830) and calculate estimated shelf-life (x).

5. pH: Estimated shelf-life 84.3 days

(a) Overall acceptance vs pH

$y = -1.2263x + 12.438$
$R^2 = 0.0156$

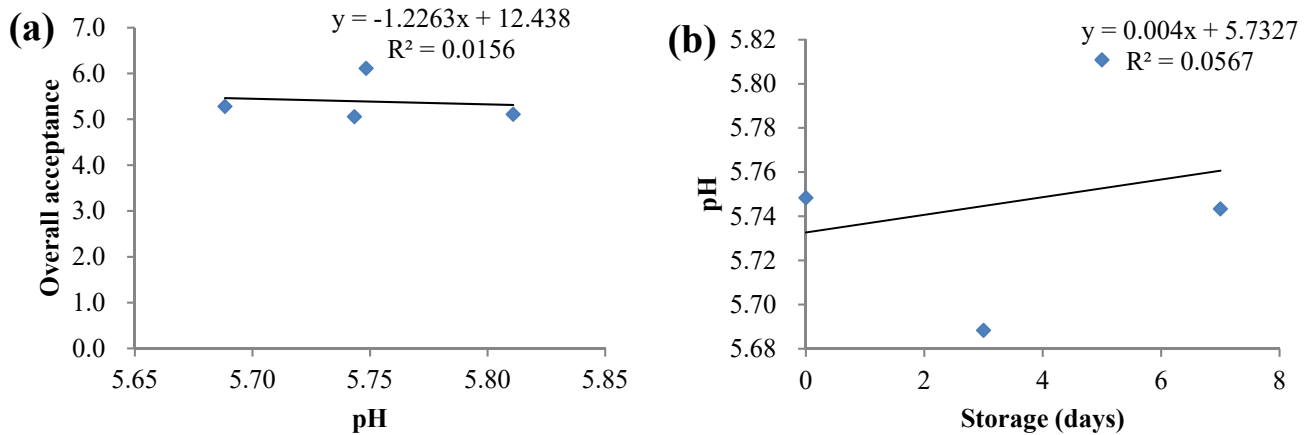**(b)** pH vs Storage (days)
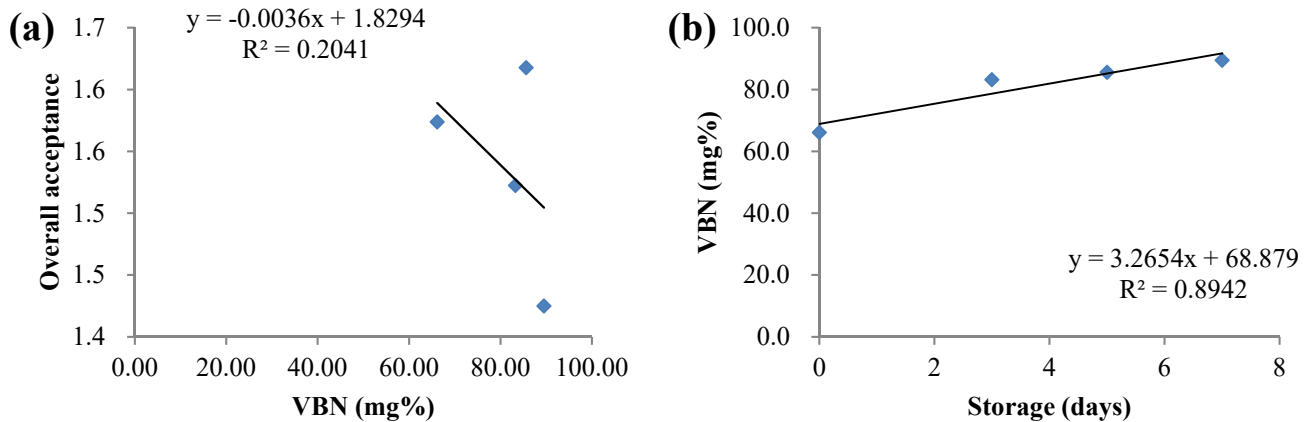
$y = 0.004x + 5.7327$
$R^2 = 0.0567$

Fig. 5. Regression equation for (a) quality limit (using overall acceptance, 5 considered as acceptable) and (b) estimated shelf-life (days) of wrap-packaged dry-aged beef based on pH.

How calculated:
1) y = 6.07 (see Fig. 5a).
2) substitute 6.07 (y) to the formula (y = 0.0040x + 5.7327) and calculate estimated shelf-life (x).

6. Volatile basic nitrogen (VBN): Estimated shelf-life 6.3 days

(a) Overall acceptance vs VBN (mg%)

$y = -0.0036x + 1.8294$
$R^2 = 0.2041$

(b) VBN (mg%) vs Storage (days)

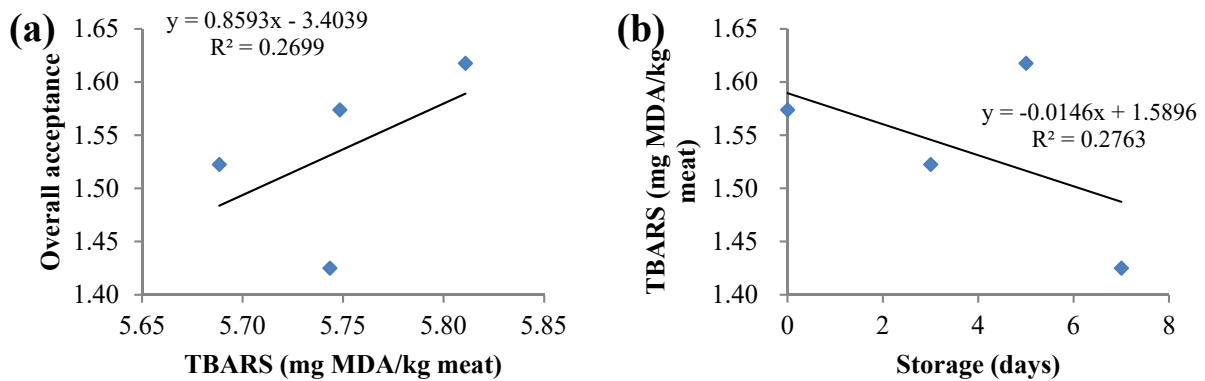$y = 3.2654x + 68.879$
$R^2 = 0.8942$

Fig. 6. Regression equation for (a) quality limit (using overall acceptance, 5 considered as acceptable) and (b) estimated shelf-life (days) of wrap-packaged dry-aged beef based on volatile basic nitrogen (VBN) content (mg%).

How calculated:
1) y = 89.31 (see Fig. 6a).
2) substitute 89.31 (y) to the formula (y = 3.2654x + 68.8790) and calculate estimated shelf-life (x).

7. 2-thiobarbituric acid-reactive substance (TBARS): Estimated shelf-life 16.4 days

(a)
$y = 0.8593x - 3.4039$
$R^2 = 0.2699$

Overall acceptance vs TBARS (mg MDA/kg meat)

(b)
$y = -0.0146x + 1.5896$
$R^2 = 0.2763$

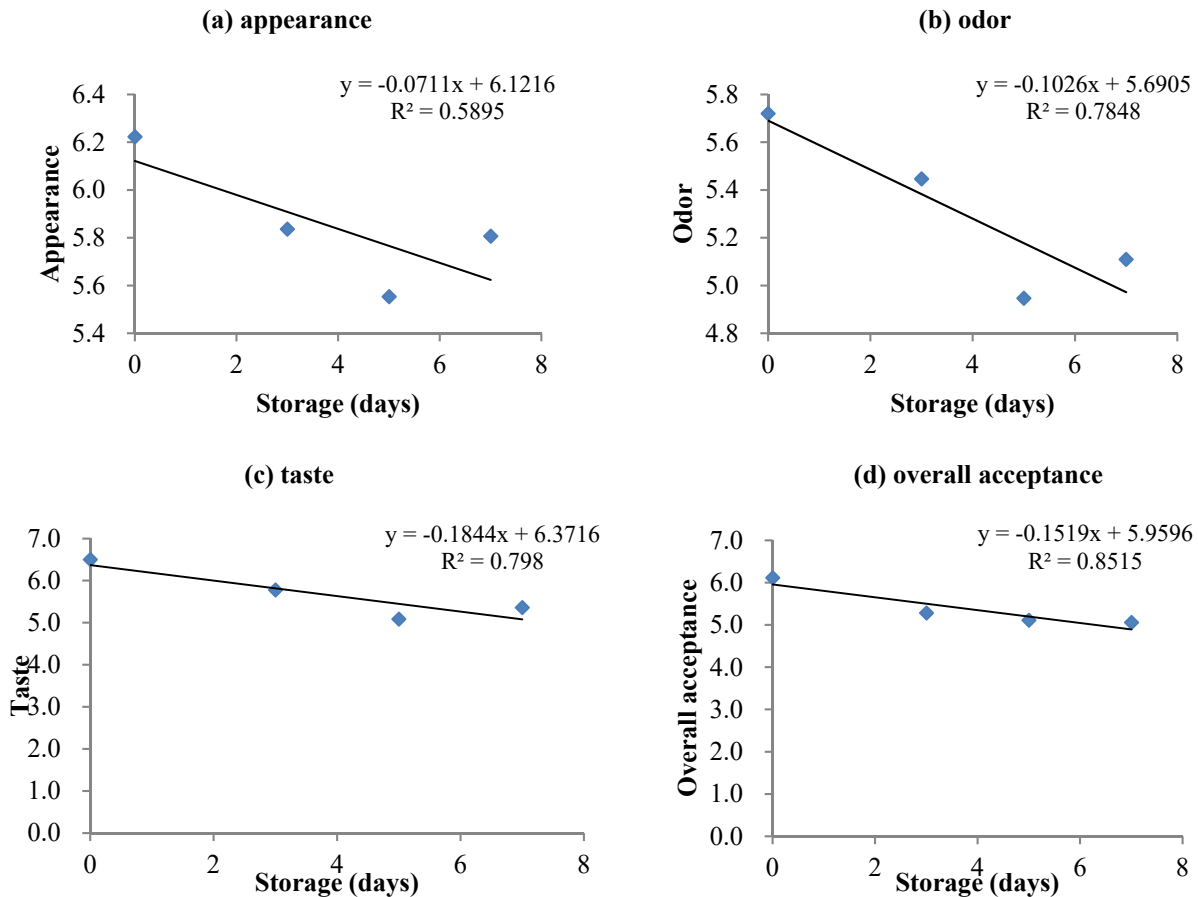TBARS (mg MDA/kg meat) vs Storage (days)

Fig. 7. Regression equation for (a) quality limit (using overall acceptance, 5 considered as acceptable) and (b) estimated shelf-life (days) of wrap-packaged dry-aged beef based on 2-thiobarbituric acid-reactive substance (TBARS) value (mg malondialdehyde/kg meat).
How calculated:
1) y = 1.35 (see Fig. 7a).
2) substitute 1.35 (y) to the formula (y = −0.0146x + 1.5896) and calculate estimated shelf-life (x).

8. Sensory evaluation: Estimated shelf-life 15.8 (appearance), 6.7 (odor), 7.4 (taste), and 6.3 days (overall acceptance)

(a) appearance
$y = -0.0711x + 6.1216$
$R^2 = 0.5895$

(b) odor
$y = -0.1026x + 5.6905$
$R^2 = 0.7848$

(c) taste
$y = -0.1844x + 6.3716$
$R^2 = 0.798$

(d) overall acceptance
$y = -0.1519x + 5.9596$
$R^2 = 0.8515$

Fig. 8. Regression equation for estimated shelf-life (days) of wrap-packaged dry-aged beef based on (a) appearance, (b) odor, (c) taste, and (d) overall acceptance.
How calculated:
1) y = 5 (considered as acceptable).
2) substitute 5 (y) to the each formula (see Fig. 8) and calculate estimated shelf-life (x).