

Online Resource 3

Article: Optimization of passive modified atmosphere packaging to preserve physical and nutritional quality of ready-to-eat immature faba bean seeds

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Online Resource 3 Two-way factorial ANOVA summary for all quality parameters of ready-to-eat minimally processed *Vicia faba* seeds stored at 5 °C under passive MAP. Factors: storage time (S; 4 levels: harvest, 3, 6 and 9 d), packaging treatment (P; 3 levels: Films A, C and E) and their interaction (S × P). F-ratios, degrees of freedom (df) and significance levels are reported. Significance: *** $P \leq 0.001$, ** $P \leq 0.01$, * $P \leq 0.05$; ns = not significant.

Parameter	Storage (S) df = 3, F	Packaging (P) df = 2, F	S × P df = 6, F	Error df	S	P	S × P
Weight loss (%) ^a	69.5	191.7	8.2	72	***	***	***
Penetration F Max (N)	6.4	12.1	1.7	108	***	***	ns
Deformation L at F Max (mm)	2.9	2.9	0.7	108	*	ns	ns
Cut test F Max (N)	4.1	8.9	1.8	108	**	***	ns
Sensory quality	570.3	553.1	85.9	108	***	***	***
Appearance	472.5	532.0	78.3	108	***	***	***
Titrateable acidity	5.7	0.8	0.7	24	**	ns	ns
Total soluble solids	20.9	2.6	1.5	24	***	ns	ns
Lightness L*	45.0	32.4	5.2	348	***	***	***
Hue angle	46.2	77.7	21.5	348	***	***	***
Chroma C*	44.2	25.1	8.3	348	***	***	***
Chlorophyll a	1364.8	449.6	131.6	24	***	***	***
Chlorophyll b	15.6	16.2	3.1	24	***	***	*
Carotenoids	140.2	69.7	9.3	24	***	***	***
Ascorbic acid	128.4	14.0	4.7	24	***	***	**
Raffinose	31.9	5.5	3.2	24	***	*	*
Sucrose	332.6	711.8	132.9	24	***	***	***
Glucose	156.2	125.9	21.5	24	***	***	***
Fructose	3.2	2.7	3.3	24	*	ns	*
Starch	25.0	24.9	5.9	24	***	***	***
Vicine	1.1	0.3	1.9	24	ns	ns	ns
Convicine	0.1	2.8	1.7	24	ns	ns	ns
TPC	113.7	51.5	13.6	24	***	***	***
TEAC	63.5	88.7	14.3	24	***	***	***
SOD	30.1	26.3	4.3	24	***	***	**
POD	7.0	7.7	1.4	24	**	**	ns
Psychrotrophic bacteria	1390.0	327.4	175.6	24	***	***	***
Mesophilic bacteria	1127.4	88.4	11.5	24	***	***	***
Enterobacteriaceae	46.3	74.5	12.5	24	***	***	***
Yeasts	4.5	4.7	3.7	24	*	*	**
Moulds	438.1	350.2	59.4	24	***	***	***
<i>E. coli</i>	499.8	425.1	155.3	24	***	***	***
Staphylococci	0.0	0.0	0.0	24	ns	ns	ns

Error df represents the degrees of freedom for within-cell variance. Unless otherwise indicated, df = 3 for storage time (S; 4 levels: harvest, 3, 6 and 9 d), 2 for packaging treatment (P; 3 levels) and 6 for the S × P interaction. Error df differ among parameters because the number of replicates varied by analysis type: n = 30 for colour parameters (df = 348); n = 10 seeds for texture parameters (df = 108); n = 10 assessors for sensory quality and appearance (df = 108); and n = 3 for all chemical, biochemical and microbiological parameters (df = 24). ^a For weight loss, storage time comprised three levels only (3, 6 and 9 d), since weight loss is zero at harvest by definition; the corresponding df are 2 for S, 2 for P, 4 for S × P and 72 for the error. Harvest values are common to the three packaging treatments and were entered as a shared baseline level of the storage-time factor; the error degrees of freedom therefore include the replicated day-0 observations. Staphylococci remained below the detection limit in every sample, so no within-cell variance was available and no F-ratio could be computed.