Loss of AM Additives from Antimicrobial Films During Storage

Table 1

Antimicrobial activity of LLDPE films against *E. coli* as observed by agar disc diffusion assay after long-term storage

Treatment	Target Conc./ %w/w	Actual Conc./ %w/w	Zone of Inhibition/ mm
At the beginning			
LLDPE	-	-	-[a]
linalool-LLDPE	1.00	0.056	11.3 ± 1.89[b] B
methylchavicol-LLDPE	1.00	0.053	8.8 ± 0.44[c] A
At 1 year of storage			
linalool-LLDPE	1.00	0.037	11.1 ± 0.11 B
methylchavicol-LLDPE	1.00	0.028	8.2 ± 0.12 A

[a] -, no reaction

[b] Values for zone of inhibition are represented as mean ± standard deviation

[c] The treatment with same letter within row is not statistically significant difference ($P > 0.05$)

Table 2

Effect of temperature on the loss of antimicrobial additive in LDPE-EVA films

Additive[a]	Temperature/ °C	Infinite additive concentration[b]/% w/w	$k \times 10^4$/ h^{-1}	$\theta_{1/2}$/ day
linalool	25	0.051	9.04	32
	35	0.036	10.79	27
methylchavicol	25	0.045	10.62	27
	35	0.029	12.50	23

[a] Actual concentration at the beginning: linalool-LDPE-EVA (0.338 % w/w);
methylchavicol-LDPE-EVA (0.345 % w/w)

[b] Remained in the polymer at infinite time