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Application of palladium-based oxygen scavenger to extend the mould free shelf life of bakery products

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Abstract:

An oxygen scavenging film based on a catalytic system with palladium (CSP) was combined with modified atmosphere (MA) packaging to extend the mould free shelf life (MFSL) of bakery products. Par-baked buns, toast bread and gluten-free bread inoculated with *Aspergillus niger* spores were packed in normal atmosphere (NA) and under MA (with 2 vol.-% of O₂) with or without CSP. Mould growth was detected after 2–3 days on all products packed under NA as well as under MA without CO₂ and CSP. Use of CO₂ in MA extended the MFSL by 8–10 days, 16–18 days and 3–4 days for par-baked buns, toast and gluten-free bread, respectively. Use of CSP with MA reduced the oxygen concentration in headspace from 2 vol.-% to < 0.01 vol.-% within 105–190 min with all bakery products. This led to a further increase in MFSL of bakery products by 3–9 days.

Keywords: oxygen scavenger, palladium, active packaging, gluten-free bread, toast bread, bread