

## **Effect of poly(lactic acid)/kenaf composites incorporated with thymol on the antimicrobial activity of processed meat**

### **ABSTRACT**

Bio-based composites comprised of poly(lactic acid) (PLA), kenaf fibers and thymol were developed and their antimicrobial (AM) properties and stability under different storage conditions investigated. The composite films containing 20-30% w/w thymol reduced *E. coli* in tryptone soy broth after two days at 37C and imparted a significant zone of inhibition in contact with *E. coli* inoculated plates. The composite films also reduced *E. coli* inoculated on the surface of processed sliced chicken samples after 30 days at 10C both in direct contact and in the vapour phase. The thymol additive was retained in the PLA/kenaf films that were wrapped with aluminium foil after 3 months of storage at ambient temperatures; however, unwrapped films lost some thymol to the atmosphere. The PLA/kenaf/thymol composite films show a strong potential for the development of active packaging systems in order to extend the shelf-life of some processed food products.

**Keyword:** Poly(lactic acid); Kenaf fibers; Food packaging; Biopolymers