

THE EFFECTS OF SELECTED ENVIRONMENTAL FACTORS ON THE  
GROWTH AND SURVIVAL OF MICROBIAL COMMUNITIES

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2006



**EFFECT OF SELECTED ANTIMICROBIAL  
AGENTS ON THE SHELF LIFE OF  
“KEROPOK LEKOR”**

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## DECLARATION

I hereby declare that this research project is based on my original work except for quotations and summaries which have been duly acknowledged.

15<sup>th</sup> Jun 2006



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## ABSTRACT

This study reported on the isolation and partial characterization of “keropok lekor” microflora as well as the effect of spraying various dosages of selected antimicrobial agents on the properties of “keropok lekor” in terms of microbial count, texture and colour. Four types of antimicrobial agents namely nisin, natamycin, lacto-antimicrobial and potassium sorbate were used. It was found that bacteria were more dominant than fungi in “keropok lekor”. There were two types of bacteria isolates. Both were gram-positive but they presence in two different forms, cocci and rod. There was also an isolate of yeast and five isolates of mould were found in “keropok lekor”. The shelf life of “keropok lekor” sample sprayed with 500ppm nisin solution showed 120 hours (5 days) extended shelf life when compared with the control sample while the “keropok lekor” samples sprayed with 4000ppm natamycin solution and 2000ppm potassium sorbate solution showed 108 hours extended shelf life. The “keropok lekor” sample sprayed with 5000ppm lacto-antimicrobial solution was showed 72 hours extended shelf life. Texture properties decreased with storage time while the colour of “keropok lekor” sample was influenced by the colour of antimicrobial agents. Texture properties of firmness and toughness showed some significant difference ( $p < 0.05$ ) among the samples and storage time (day). This study found that, by using the appropriate dosages of antimicrobial agents, the shelf life “keropok lekor” can be extended up to 120 hours.

## KESAN AGEN ANTIMIKROBIAL TERPILIH TERHADAP JANGKA HAYAT KEROPOK LEKOR

### ABSTRAK

Kajian ini melaporkan tentang pemencilan dan ciri-ciri mikroflora bagi keropok lekor serta kesan-kesan penyemburan pelbagai dos agen antimikrobial terhadap pengiraan mikrobial, tekstur dan warna. Empat jenis antimikrobial yang digunakan ialah nisin, natamycin, lakto-antimikrobial dan potassium sorbate. Didapati bahawa bakteria adalah lebih dominan berbanding dengan fungi dalam keropok lekor. Terdapat dua jenis bakteria yang dipencilkan dan kedua-duanya adalah gram positif tetapi hadir dalam bentuk yang berlainan iaitu cocci dan rod. Satu jenis pemencilan bagi yis dan lima jenis pemencilan kulapuk dijumpai dalam keropok lekor. Jangka hayat bagi sampel keropok lekor yang disemburkan dengan 500ppm nisin menunjukkan bahawa ia boleh dipanjangkan sehingga 5 hari berbanding dengan sampel kawalan. Selain itu, jangka hayat bagi sampel keropok lekor yang disemburkan dengan 4000ppm natamycin dan 2000ppm potassium sorbate mempunyai jangka hayat sehingga 108 jam. Sampel keropok lekor yang disemur dengan 5000ppm lacto-aktimikrobial menunjukkan jangka hayatnya bertahan sehingga 72 jam. Ciri-ciri tekstur keropok lekor adalah bergantung kepada masa penyimpanan dan warna sampel adalah dipengaruhi oleh warna agen aktimikrobial. Ciri-ciri tekstur iaitu kepadatan dan kekerasan menunjukkan sebahagian perbezaan signifikan ( $p < 0.05$ ) antara sampel dan masa penyimpanan (hari). Dalam kajian ini, didapati penggunaan dos agen antimikrobial yang sesuai boleh menunjukkan jangka hayat keropok lekor boleh dipanjangkan sehingga 120 jam.