Klebsiella pneumoniae: A potential food safety risk in wild fruits and dried vegetables in Botswana

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Abstract:
The bacterium Klebsiella pneumoniae is ubiquitous in nature and is found on the general vegetation and their fruits. The subspecies "pneumonia" is known to cause community-acquired and nosocomial pneumonia in immune-compromised persons (Ko et al., 2002; Yu et al., 2007; Yinnon et al., 1996 and Struve and Krogfelt, 2004). Some of the vegetables and wild fruits form part of the staple diet or is consumed as delicacies in Botswana. The potential presence of K. pneumoniae therefore poses a potential food safety hazard given the fact that the gastrointestinal route is considered one of the major infection routes of K. pneumoniae (Struve and Krogfelt, 2004 and Struve and Krogfelt, 2003). This study sought to evaluate the occurrence of K. pneumoniae in dried vegetables and fruits consumed in Botswana. One representative dried vegetable (morogo wa dinawa) and two representative wild fruits (morula and moretlwa) were selected for the study based on their popularity in the country. The study confirmed the occurrence of K. pneumoniae on the three foods studied. The isolation rates of the microbe per sample type was 92.3% (morula fruit), 86.4% (morogo wa dinawa) and 86.2 (moretlwa). The overall isolation rate from the three sample types was 89.3%. This showed that there is a significant presence of the microbe on the three foods studied therefore there is a potential food safety risk in consuming these foods by susceptible groups (immune-compromised individuals). The API20E identification system showed five different biotype profiles. The most frequent API20E biotype encountered was 5215773 (44.6%) followed by 5214773 (39.1%). The rest of the biotypes (5215573, 5015773 and 4215773) occurred at a frequency of 2.2%. These biotypes show that there are definite biochemical differences between the isolates. Of the isolates obtained 38% were of the encapsulated phenotype. The highest in-sample occurrence rate of the encapsulated phenotype was in morogo wa dinawa (52.6%) followed by moretlwa (40%) and lastly morula (31.3%). Antibiotic susceptibility testing by the disk diffusion method showed that the isolates were most susceptible to 30ug cefotaxime (24.4mm average clearance zone), and totally resistant to 1ug oxacillin (4.0mm average clearance zone) and 30ug vancomycin (0.0mm average clearance zone). All of the strains analysed were completely resistant to oxacillin (1ug) and vancomycin (30ug). For cotrimoxazole (25ug), 22.8% of the isolates were completely resistant.

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Biological Risks Associated with Fermented Diary Products, Fruits, Vegetables and Meat: A Critical Review. Chukwuma Stephen Ezennu. When harvested, fruit and vegetables undergo rapid deterioration, especially in the humid tropics where the prevailing environmental conditions accelerate the process of decomposition. There are many methods exploited for preserving fresh fruit and vegetables. Clostridium botulinum [37] (Table 2) is also a potential problem in fermented sausage but lactobacilli has been shown to have an inhibitory effect against C. botulinum. Also, this organism cannot multiply at a water activity (aW) level of 0.94 - 0.95 [38]. E coli and Klebsiella pneumonae are two types of bacteria which act as causative organisms for various infections in our body. Humans are always exposed to various types of pathogenic microorganisms. For example, food items like meat, milk or dairy products and raw fruits and vegetables are most likely to get contaminated with this bacterial pathogen due to their unsafe or unhygienic ways of preparation and consumption. Other than that, this can spread through direct contact, especially when a person doesn’t wash his hands after defecation – the residual bacteria can enter someone else’s body by touching contaminated objects. Two new superbugs – Clostridium Difficile and Klebsiella Pneumonae -- have come to the fore, and they are evolving rapidly. They are resistant to most antibiotics, and roaming the community. Find out the symptoms of c diff, and Clostridium Difficile tre. Clostridium Difficile & Klebsiella Pneumonae SuperBugs | Newsletter. There are many perfects in the world. It's also worth mentioning that Klebsiella is abundantly present in soil, water, and any fruits or vegetables grown close to the ground. When given an opportunity, its onset is swift, and the symptoms severe. Initial symptoms are flu-like and include high fever, chills, cough, and copious amounts of viscous and bloody mucous in the lungs.