

**ISOLATION AND CHARACTERIZATION OF BACTERIA  
ASSOCIATED WITH SMOKED CATFISH (ORDER  
SILURIFORMES: FAMILY *CHLARIIDAE*) IN KUALA  
PILAH, NEGERI SEMBILAN**

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in the Faculty of Applied Sciences  
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This Final Year Project entitled **“Isolation and Characterization of Bacteria Associated with Smoked Catfish (Order Siluriformes: Family *Chlariidae*) in Kuala Pilah, Negeri Sembilan”** was submitted by Nurhidayah binti Yusof, in partial fulfillment of the Requirements for the Degree of Bachelor of Science (Hons.) Biology in the Faculty of Applied Sciences, and was approved by

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## ABSTRACT

### ISOLATION AND CHARACTERIZATION OF BACTERIA ASSOCIATED WITH SMOKED CATFISH (ORDER SILURIFORMES: FAMILY *CHLARIIDAE*) IN KUALA PILAH, NEGERI SEMBILAN

Bacteria are a part of the microflora of the environment, which may cause harm to human. Bacteria are transmitted to human in a various ways, especially through food. One example of food that can transmit bacteria is smoked fish. Commonly, this type of food is found in an open shelf either in a proper outlet or a roadside stall. A study was conducted aiming at the isolation and characterization of bacteria associated on smoked catfish. Family Chlariidae fish was used as sample in the study. The smoked fish samples were collected at three different markets around Kuala Pilah, Negeri Sembilan. The bacteria were isolated by swabbing the catfish skin, and the samples were characterized by gram staining and biochemical tests. Differentiation and characterization of the isolates were based on their growth characteristics on various media, such as Mc Conkey Agar (MCA), Nutrient Agar (NA), Triple Sugar Iron Agar (TSI), Salmonella-Shigella Agar (SSA), Simmons Citrate Agar (SCA), Sulfide-Motility-Indole Medium (SIM) and Carbohydrate fermentation test. The mean bacteria load for smoked fish was  $6.57 \times 10^6$  CFU/ml. The following bacteria isolated were *Citrobacter* sp., *Escherichia* sp., *Enterobacter* sp. and *Shigella* sp.