Vibrio Species in Seafood, Meat and Meat Products from Different Localities in Libya

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Vibrio species are present in various samples of seafood, meat, and meat products from different localities in Libya. These species are responsible for various diseases such as cholera, septicemia, and foodborne gastroenteritis. Vibrio parahemolyticus, Vibrio cholerae, and Vibrio vulnificus are some of the species that were isolated. A total of 93 samples were tested, including 46 samples of seafood (21 shrimps, 5 clams, 8 sardines, 1 amberjack, 1 shark, 2 dusky groupers, and 1 sea needle), 34 samples of meat (9 beef, 10 lamb, 6 sheep, 9 chicken), and 13 samples of other animal products (2 beef patties, 5 beef burgers, 5 chicken burgers, and 1 burger). The mean bacterial count for Vibrio species in seafood was 3.8 x 10^4 CFU/g, while in meat it was 6.5 x 10^4 CFU/g. Vibrio parahemolyticus was isolated from beef for the first time in Libya. The results indicate the presence of Vibrio species in various samples, emphasizing the importance of food safety and hygiene.
من سلالة الضمات (من اصل 48 بنسبة (18.75%) كانت overlapped peaks قمة التداخل وغير مفضلة في اختبار البلمرة والتسلسل الجيني. بالإضافة فقد وجد أن أكثر البكتيريو شيوعا بالفحص هي . Proteus spp., Escherichia coli, Klebsiella pneumoniae, and Enterobacter spp.

هذه النتائج ربما ترجع الى العديد من العوامل مثل التلوث البيئي أثناء اعدادها وتخزينها ونقلها وبيعها. و باختصار تعتبر هذه الدراسة خطوة مستقبلية أولية في ليبيا للاتجاه بخطى حثيثة باستخدام اختبار البلمرة والتسلسل الجيني في مأكولات بحرية واللحوم ومنتجاتها.
Abstract:
The genus Vibrio includes several food-borne pathogens, which cause a spectrum of clinical conditions including septicemia, cholera and milder forms of gastroenteritis. Several Vibrio species are commonly associated with food-borne illnesses including Vibrio cholerae, Vibrio parahemolyticus, and Vibrio vulnificus. A total of 93 seafood, meat and meat products samples which included: 21 shrimps, 5 clam, and 20 different of fishes (8 sardine, 4 mackerel, 2 annular sea bream, 2 dusky grouper, 1 amberjack, 1 sea needle, 1 common dentex, and 1 shark), 34 samples of raw meat (9 camel meat, 10 beef, 6 mutton and 9 chicken) and 13 samples of meat products (2 beef sausage, 5 beef burger, 5 chicken burger and 1 kebab). Samples were collected from different localities in Libya (Tripoli, Regdalin, Janzour and Tobruk). All samples were subjected to microbiological analysis for enumeration, isolation, and identification of Vibrio spp. using conventional cultural and molecular methods. Out of the 93 cultured samples only 48 (51.6%) yielded bacterial colonies on thiosulfate-citrate-bile salts-sucrose agar (TCBS) with cultural characteristics suggesting the presence of Vibrio spp. Twenty-seven out of 46 processed seafood samples (58.7 %) yielded colonies on (TCBS), whereas cultures of meat and meat products samples (47 in total), only 21 of them (44.6%) produced suspected colonies on TCBS. Among cultured seafood samples, the highest bacterial count was recorded in clam with bacterial colony count of 3.8 x10^4 CFU/g. with a standard deviation value of 2.3 x10^4 CFU/g. Moreover, chicken burger samples showed the highest incidence bacterial count with 6.5 x10^4 CFU/g tissue with a standard deviation value of 1.7 x10^4 CFU/g. Molecular analysis (using PCR and sequencing of 16S rDNA) of the isolates obtained in this study, showed that 11 out of 48 (22.9%) were confirmed to be Vibrio spp. The isolation of Vibrio parahemolyticus from one camel meat samples was the first report of its kind collected from Libya. On the other hand, there were 28 out of 48 (58.33%) of suspected to be Vibrio spp. isolates examined by PCR and sequencing of 16S rDNA, showed many others different of microorganisms. However, there were 9 out of 48 (18.75%) of suspected to be Vibrio spp. isolates gave overlapped peaks, unreadable sequence. In additions higher isolation frequencies, was observed in the current study especially for Proteus spp., Escherichia coli, Klebsiella pneumoniae, and Enterobacter spp. These findings might be attributed to many factors as higher environmental contamination during processing, storage,
transportation and sales. In brief, this study was an initial step in a future molecular research targeting Vibrio food borne illnesses in order to map out the magnitude of such pathogen in Libyan seafood, meat and meat products.