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Short Communication

Antibiotic Resistance: Food Microbiology

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ABSTRACT

Scientific study of microorganisms is known as Food Microbiology, its used in both in food and production of food. This incorporates microorganisms that defile food, just as those utilized in its creation; for instance to produce, cheddar Cheese, yogurt, and wine.

Keywords: Microbiology; Antibiotics; Food-Microbiology

INTRODUCTION

Anti-microbial obstruction is one of the serious dangers looked by the world. In the U.S., every year more than 2.8 million individuals are infected with antibiotic-resistant strains, coming about in somewhere around 35,000 deaths. An audit on worldwide anti-microbial obstruction revealed that constantly 2050, 10 million lives each year are in danger because of the ascent of contamination by antimicrobial-safe strains. As per the United States Department of Agriculture (USDA), ~ 97% of fish and shellfish devoured in the U.S. are imported from, India, Indonesia, China, Ecuador ,and Vietnam ,Thailand. In the huge hydroponics tasks, where cultivated shrimps are developed as monoculture at high thickness, the commonness of microbes is perhaps the greatest test looked by the hydroponics business. Disease brought about by microbes in hydroponics activities can prompt enormous creation misfortune that can totally clear out the shrimp ranches. The post-hatchlings disease brought about by bacterial microbes in shrimps in 2013 brought about 1 billion dollars underway misfortune. To forestall the creation misfortune related with bacterial contaminations, the hydroponics business and shrimp incubators are intensely reliant upon the use of anti-microbials as prophylactic and remedial specialists. The utilization of various classes of anti-infection agents, e.g., antibiotic medications (chlortetracycline, oxytetracycline, and antibiotic medications), fluoroquinolone (enrofloxacin and ciprofloxacin), quinolones (oxolinic corrosive and norfloxacin), sulfonamides, chloramphenicol, and nitrofuran are drilled in shrimp cultivating. Anti-infection agents are managed in hydroponics by blending them in their eating regimen or by adding them in raising water. Nonstop use of anti-toxins by the shrimp incubation centers and homesteads works with the improvement of anti-toxin Resistance bacterial (ARB) strains. Non-biodegradable anti-infection agents with a long movement period apply specific pressing factors in a climate. For example, utilization of quinolones (oxolinic corrosive) in a high microbial burden climate frames an ideal blend for the determination of anti-toxin safe strains in ranch raised shrimp. When an anti-toxin obstruction determinant has been chosen, it can without much of a stretch be moved to different strains.

Famous foods like seafood/ cooked shrimp are processed using minimal heat treatment and can act as perfect vehicles for transferring ARB strains. Presently, FDA cooking recommendations are focused on mitigating *Listeria monocytogenes* in cooked shrimp, which may not be effective to eliminate antibiotic-resistant bacteria spread over several genera. Further, antibiotic-resistant strains can be more tolerant to milder temperature treatments used for shrimp processing. Cooked shrimp samples are mostly harvested and processed overseas. Each country and processing facility has its own processing specifications, due to which there is a considerable variation in the microbiological specifications of cooked shrimp available in the retail market. These samples that can be directly consumed after thawing or short heat treatment can be a perfect vehicle for ARB strains and opportunistic pathogens. Past studies have extensively studied the prevalence of antibiotic resistance in fresh produce, beef, poultry, and manure from different livestock. However, limited research has been conducted evaluating the prevalence of ARB strains in shrimp. Cross contact of raw shrimp with processed shrimp is another issue of concern. The presence of ARB strains and the opportunistic pathogen can be detrimental to human health and limit treatment options.

Microbiome diversity has a significant impact on host health. The competitive exclusion theory entails that the higher gut microbial diversity, the lower the possibility for pathogenic colonization. The application of antibiotics at hatcheries and shrimp farms can cause dysbiosis. Researchers in the past have characterized and observed major gut microbiome composition differences among diseased and healthy shrimps. Similarly, a comparison of the gut microbiome composition of farmed shrimp raised with antibiotics and wild-caught shrimp raised without antibiotics can be used

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for developing alternate sustainable methods for shrimp farming. Therefore, the aim of this study was to (a) isolate and characterize ARB strains among commercially available shrimp samples and (b) characterize the gut microbiome diversity of wild-caught shrimp from the U.S. compared to farm-raised shrimp imported from Ecuador.

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