Comparison of Different Cultural Protocols in Isolation of *Yersinia enterocolitica*

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Abstract

*Yersinia enterocolitica* is the third most important foodborne enteric pathogen that causes gastroenteritis in Europe after campylobacteriosis and salmonellosis. There are numerous enrichment schemes available in isolating *Y. enterocolitica*. However, the isolation and recovery of *Y. enterocolitica* is very contingent, difficult and time consuming. The lack of good isolation methods mask and underestimate the actual incidence of yersiniosis. The main objective of this study was to compare the recovery ability of different enrichment schemes and plating methods in the isolation of *Y. enterocolitica*. Six cultural protocols, all comprising of a combination of three enrichment broths namely *Yersinia* selective enrichment broth according to OSSMER (YSEO), irgasan-ticarcillin-potassium chloride (ITC), and phosphate buffered saline (PBS), cefsulodin-irgasan-novobiocin (CIN) as selective plating agar, with or without a post-enrichment alkaline treatment were evaluated. Cold enrichment at 4°C for 3 weeks using PBS followed by a post-enrichment alkaline treatment and plating on CIN agar was the best among the six protocols evaluated and the detection limit was \(10^2\) CFU/mL.

Introduction

*Yersinia enterocolitica* is the third most important foodborne enteric pathogen that causes gastroenteritis in Europe after campylobacteriosis and salmonellosis (EFSA, 2009). It is known to cause gastrointestinal problems with symptoms ranging from acute enteritis with fever to occasionally bloody watery diarrhea in children and sometimes mimics appendicitis in young adults and older children that frequently leads to unnecessary laparotomy. In some cases, the infections may cause lethal septicaemia.

There are numerous enrichment schemes available to isolate *Y. enterocolitica*. These enrichment procedures include direct selective enrichment, two-step preenrichment-selective enrichment at higher temperature (~25°C) or cold enrichment that takes up to one month. However, the recovery of *Y. enterocolitica* is very contingent and frequently associated with difficulties. The lack of good isolation method masks and underestimates the actual incidence of yersiniosis. Therefore, the main objective of this study is to compare the recovery power of different cultural methods in isolation of *Y. enterocolitica*. 