Evaluation of Different Culture Media for Detection of *Listeria monocytogenes*

Hossein Jamali\(^1\)\(^2\), Lay Ching Chai\(^1\)\(^2\) and Kwai Lin Thong\(^*\)\(^1\)\(^2\)

Microbiology Division, Institute of Biological Science, University of Malaya; Biomedical Science and Molecular Microbiology Laboratory, A407, Institute of Graduate Studies, University of Malaya, 50603, Kuala Lumpur, Malaysia

*Corresponding author: thongkl@um.edu.my*

Abstract

*Listeria monocytogenes* is a gram positive, nonsporing, and pathogenic to humans and some animals. It is an important foodborne pathogen that gets transmitted via consumption of contaminated foods. The isolation and detection of this organism is tedious and time consuming. The aim of this study was to determine the preformance of CHROMagar\(^TM\) *Listeria* compared to other commonly used selective media, Palcam agar and *Listeria* selective for detection of *L. monocytogenes*. The sensitivity and the specificity of CHROMagar\(^TM\) *Listeria* for detection of *L. monocytogenes* from RTE food samples were 100%. The sensitivity of *Listeria* selective agar and Palcam agar were 85.7% and 64.3%, respectively, while the specificity was 92.3% for both. The efficiency of CHROMagar\(^TM\) *Listeria* (100%) was higher than *Listeria* selective agar (91.6%) and Palcam agar (89.3%). The isolation of *L. monocytogenes* on CHROMagar\(^TM\) *Listeria* was easier with a relatively high efficiency of detection.

Introduction

*Listeria monocytogenes*, is a gram positive, non-spore, low C + G content, highly motile and cause of listeriosis in humans and animals. This bacterium was isolated from environments, water and food. Recently, in the USA, reported cases of listeriosis due to consumption of contaminated cantaloupe in 2011 (CDC, 2011). In Malaysia, *L. monocytogenes* was found in foods (Arumugaswamy et al., 1994), beef and fermented fish (Hassan et al., 2001). The enrichment cultures followed by plating on selective agars were used for detection of low levels of *Listeria* spp. in foods. Selective agars commonly used for isolation include Modified Oxford agar, *Listeria* LPM Agar, *Listeria* selective agar, PALCAM agar and Oxford agar. CHROMagar\(^TM\) *Listeria*, BBL\(^TM\) CHROMagar\(^TM\) *Listeria* and ALOA\(^TM\) have been developed as selective chromogenic media for detection of *L. monocytogenes*. Hydrolysis of esculin is used to differentiate *Listeria* spp. and the other bacteria in the selective agar. Production of phospholipase-C is an important characteristic to identify the *L. monocytogenes* and *L. ivanovii* from the other *Listeria* spp. on CHROMagar\(^TM\) *Listeria* (Aragon-Alegro, 2008). The aim of this study was to evaluate different selected media to detect *Listeria monocytogenes*.

Materials and Methods

Samples collection

One hundred thirty one (131) samples of ready to eat (RTE) foods were tested during the study period.