Detection of *Enterobacter sakazakii* and other *Enterobacter* sp from Dairy Cow's Milk in Boyolali and Sleman

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ABSTRACT

Enterobacter sakazakii is considered as an opportunistic pathogen that has been implicated in severe forms of necrotizing colitis and meningitis especially in neonates with a mortality rare varying from 40%-80%. The natural habitat *E.sakazakii* is not well understood and has been reported as frequency isolated from different environments including soil, rats, flies, milk powder factories, chocolate factories and households. A total of 100 samples were obtained from dairy cow's milk were studied. The presence of *E.sakazakii* and *Enterobacter sp* was detected using the Holt et al., 1994; Guillaume et al., 2005 and Turner et al., 2000 procedure on TSBA medium. *E.sakazakii* was not isolated from both district Sleman and Boyolali. However, *E.cloacae* was found in 33 of 75 isolates (44%) of samples from Sleman. Meanwhile 12.7% *E.cloacae* and 5.4% *E.gergoviae* was found of samples from Boyolali.

Key words: *Enterobacter sakazakii, Enterobacter sp*, *dairy cow's milk*

INTRODUCTION

Enterobacter sakazakii and other Enterobacter species have caused foodborne illness through consumtion f a variety of foods. *Enterobacter sakazakii* is a Gram negative, facultative, rod-shaped bacterium. *Enterobacter sakazakii* is a Gram negative, facultative, rod-shaped, non-spore forming bacterium. The organism was called "yellow-pigmented Enterobacter cloacae". It belongs to the family *Enterobacteriaceae* and genus *Enterobacter* that contains a number of species including *E.agglomerans, E.cloaceae, E.aerogene*s and *E.gergoviae*.

The differentiation among these species is based on biochemical reactions, and serological and molecular techniques (Hoffman and Roggenkamp, 2003; Iversen et al., 2004). *E.sakazakii, E agglomerans,* and *E.cloacae* are considered the main species of this genus that are frequently isolated from clinical samples and food products (Farmer et al., 1980). *E.sakazakii* and *Enterobacter species* have been reported as frequently isolated from different environments including soil, rats, flies, milk powder factories, chocolate factories and households (Kandhai et al., 2004). *E.sakazakii* has been also isolated from a wide range of foods including ultra high-temperature treated milk (UHT milk), cheese, meat, vegetables, grains,sorghum seeds, rice seeds, herbs, spices, fermented bread, fermented beverage, tofu, and sour tea (Iversen&Forsythe, 2004; Leclercq et al., 2002).

E. sakazakii is considered an opportunistic pathogen that has been implicated in severe forms of necrotizing colitis (Van Acker et al., 2001) and meningitis (Bar-Oz et al., 2001) especially in neonates with a mortality rate varying from 40% to 80% (Muytjens et al., 1988).

The US Food and Drug Administration (FDA, 2002) has issued an alert to health care professionals about the risk associated with *E.sakazakii* infections among neonates fed with milk-based infant formula. The alert stated that a major contribution to the avoidance of *E.sakaz*akii infection in premature babies and neonates is the prevention of contamination of infant milk formula during production and bottle preparation. However, knowledge of etiological and ecological characteristic of *E.sakazakii* is sparse and its occurrence in factories that produce infant formulas and in hospital kitchens has not been studied in depth.

The natural habitat *E.sakazakii* is not well understood and has been reported as frequency isolated from different environments including