Organic Milk Production in Rural Dairy Farms in Lembang West Java – Indonesia

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ABSTRACT

Milk contaminations such as heavy metals and organophosphate/chlorines cause high risk for human health. In the same time, these contaminants reduce the price accepted by farmers from the Industrial Milk Processing companies (IPS). Bioplus probiotics and *Cytophaga sp* were introduced to rural milk production system to overcome the problems thus improving organic milk quality. Sixty heads of lactating dairy cattle (Frisien Holstein cross) were divided into two groups of 30 cows. Group 1, animals were offered 200 g Bioplus and 0.5 ml *Cytophaga sp*/head/day. Group 2, 30 cows were used as control which was common practice in rural condition. Milk quality was evaluated 1 week before, and 4 weeks after treatments. The initial results showed that heavy metal Pb was found both in feedstuffs and milk. Pb in feed sources ranged from 0.11 to 0.66 ppm while in milk ranged from 0.15 to 0.32 ppm (permittable level is 0.30 ppm; SNI, 1998). Pb in milk sample after Bioplus probiotic application became 0.05 – 0.08 ppm. Pesticide residues were found in feed, but in small quantity. Conclusion that can be drawn from the current experiment is the pesticide residue from organochlorine group is rarely found in the milk produced by rural farmer around Lembang West Java. Pb contained in milk is decreased below 0.30 ppm four weeks after probiotic application.

Key words: *milk contaminants, Pb, pesticides, probiotic, feed additives*

INTRODUCTION

Milk demand increases as the wealthy of Indonesian people increase. The quality of milk will affect the health of consumers. It is found that in some rural area, milk produced by farmer is contaminated by some hazardous substrates, such as heavy metal particularly plumbum (lead, Pb) and pesticides (Ilyas *et al*., 1986; Indraningsih *et al*., 1988; Indraningsih *et al*., 1990; Indraningsih *et al*., 2003). Similar cases were also reported in other countries such as Australia, Yunani and Hongkong (Corrigan and Seneviratna, 1990).

Source of Pb contaminant is mostly from air pollutant resulted from automotive. In some area, farmers harvest grass around the traffic area. Therefore, most of the grasses might be contaminated by Pb. Pesticide residue usually comes from agricultural by-product. Many farmers use agricultural by-product as source of forage for their animals.

Pesticide residue and Pb contaminant have negative effect on human health such as toxicity and skin irritation. For a long period, it causes immunosuppressive and carcinogenic (Goebel *et al*., 1982; Stopkes *et al*., 1995; Kishi *et al*., 1995).

Probiotic *Cytophaga sp* is reported to be able to degrade pesticide residue from organochlorine group at 100 % after 3 days (Prihartini, 2006). The level of Pb contaminant is reported can be reduced by increasing the rumen bacteria population. This is because the bacteria can bind Pb in the rumen, and this bound PB is excreted through feces (Sunaryadi, 2006). Probiotic Bioplus offered to ruminant animals has been reported to increase the number of rumen bacteria (Winugroho *et al*., 2003). Probiotics Bioplus offered to the animals would increase population of rumen bacteria. Therefore, this experiment is conducted to study the effects of Bioplus probiotics and *Cytophaga sp* introduction to rural milk production system to overcome the problems and to improve organic milk quality.

MATERIALS AND METHODS

The experiment was conducted in rural dairy farming at Lembang – West Java. Sixty lactating dairy cattle (Frisien Holstein cross) were used.