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ABSTRACT BOOK

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than G bases in the nucleotide sequence of TaqMan probe).Wild-type probes *katG*WT10 and *katG*WT17 are the best probes that obtained from 30 probes as resulted design. Based on this study, it was concluded that sequences 5'-FAM-TCACCAGCGGCATCGAGGTC-TAMRA-3' and 5'-FAM-ATCACCAGCGGCATCGAGGTC-TAMRA-3' were the most appropriate nucleotide sequences of wild-type TaqMan probe by *in silico* design.

Keywords: *Tuberculosis, in silico, katG gene, TaqMan probe, real-time PCR*

POTENTIAL OF LIVESTOCK MANUREFOR COAL ACTIVATION

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ABSTRACT

The natural formation of methane by bacteria in anaerobic environments is named biogenic gas. Gas trapped in coal, formed thermogenesis as well as biogenesis, known as coal-bed methane (CBM). The availability of organic material as decomposition material into methane iscontinuously required for the production of methane in the coal aquifer. The aim of research is to determine the extent of the cattle feces bacteria able to grow and produce methane in coal. Parameters measured Volatile Fatty Acids (VFA) and the production of biogas, namely: nitrogen, hydrogen, carbon dioxide and methane. Explorative method is used and data was analyzed by descriptive approach. The results showed that the bacteria found in the feces can live in the coal and produce biogas. Observation of the second day isacidogenesis process, proved to produce VFA with the largest component is aceticacid. Acetic acid will undergo decarboxylation and reduction of CO_2, after that H_2 and CO_2will produce methane (CH_4) and carbon dioxide (CO_2) as final product.

Keywords: *methane, CBM, bacteria, livestock feces*

ISOLATION, SCREENING, AND CHARACTERIZATION OF PROBIOTICS (LACTIC ACID BACTERIA) ANTAGONISTIC AGAINST *Candida albicans*

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ABSTRACT

Candidiasis in reproductive tract of human are mainly caused by *Candida albicans*, which has frequently been found among females. This infection often causes serious problems, particularly on their reproductive tract (genital part). Until recently, control of this infection has relied on the use of antibiotics. However due to numerous bad side effects of antibiotics, lactic acid bacteria have been proposed as an alternative method to control the growth of *Candida albicans*. Therefore, this research was aimed to isolate, screen, and

characterize lactic acid bacterial isolates (LAB) antagonistic against *Candida albicans* (the causative agent of candidacies infection in reproductive tract of human). LABs were isolated from various fermented foods, such as *tape ketan* and *kimchi*. Isolation of LABs was conducted by applying dilution and spread plate method on MRS agar medium supplemented with BCP indicator to distinguish LABs from non acid-producing bacteria. Colonies with indication to produce acid were screened for antagonistic activity against *C. albicans* on MRS agar and followed by characterization of those isolates (Gram stain, catalase production test, oxydase production, gas production test, resistance test to low pH conditions and to high level of NaDC (sodium deoxicolic), and test for ability to convert colic acid (CA) into deoxicolic acid (DCA)). The results showed that 46 LAB isolates were successfully isolated from samples of *tape ketan* and *kimchi*. Among those, 7 isolates showed antagonistic activity against *C. albicans* in *in vitro* tests. All these 7 candidates were also found to be resistance to low pH conditions (up to pH 2) and to high level of NaDC (up to 0.6 mM). Four most potential isolates were further testes for ability to convert colic acid into deoxycolic acid and none showed positive result, indicating that they all showed initial potential and safe for future human probiotic development (especially to be used to treat patients infected by *C. albicans*).

Keywords: *C. albicans, lactic acid bacteria, tape ketan, kimchi.*

PRODUCTION OF XYLANASE ENZYME USE BROTH OF CHICKEN INTESTINE AND RICE WATER AS GROWTH MEDIUM FOR *Bacillus* sp.

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ABSTRACT

Endo-β-1,4-xylanase is a hydrolytic enzyme that can cut 1.4 bond on the chain polysaccharide xylan. This enzyme is produced from bacteria such as *Bacillus* sp. Growth of *Bacillus sp.* using artificial liquid medium of the intestine of chicken broth and rice water with optimization of mixture medium volume and incubation temperature. This study aims to determine the growth and character of the product *Bacillus* sp. enzyme *endo-β*-1,4-xylanase produced. The results showed that the optimum conditions a mixture of volume (broth chicken intestine : rice water) is (1:4) with incubation temperature 37°C for 20 hours. The resulting enzyme product has a protein content of 2.600 µg/ml, enzyme activity 0.210 U/ml, specific activity of xylanase 0.080 U/mg, and molecular weight of between 45,000 to 66,200 dalton.

Keywords: *endo-β-1,4-xylanase, broth of chicken intestine, rice water, Bacillus* sp.

ISOLATION, SCREENING, AND CHARACTERIZATION OF PROBIOTICS (LACTIC ACID BACTERIA) ANTAGONISTIC AGAINST *Candida albicans*

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ABSTRACT

The main objective of this research was to isolate, screen, and characterize lactic acid bacterial isolates (LAB) antagonistic against *Candida albicans* (the causative agent of candidacies infection in reproductive tract of human). LABs were isolated from various fermented foods, such as *tape ketan* and *kimchi*. Isolation of LABs was conducted by applying dilution and spread plate method on MRS agar medium supplemented with BCP indicator to distinguish LABs from non acid-producing bacteria. Colonies with indication to produce acid were screened for antagonistic activity against *C. albicans* on MRS agar and followed by characterization of those isolates (Gram stain, catalase production test, oxydase production, gas production test, resistance test to low pH conditions, and test for ability to convert colic acid (CA) into deoxicolic acid (DCA)). The results showed that 46 LAB isolates were successfully isolated from samples of *tape ketan* and *kimchi*. Among those, 7 isolates showed antagonistic activity against *C. albicans* in *in vitro* tests. All these 7 candidates were also found to be resistance to low pH conditions (up to pH 2). Four most potential isolates were further testes for ability to convert colic acid into deoxycolic acid and none showed positive result, indicating that they all showed initial potential and safe for future human probiotic development (especially to be used to treat patients infected by *C. albicans*).

Keywords: *C. albicans,* lactic acid bacteria, *tape ketan*, *kimchi*

Introduction

Candidacies infection in reproductive tract of human is mainly caused by *Candida albicans* (Kundu and Garg, 2012). This infection has frequently been found among females and often causes serious problems, particularly on their reproductive tract (genital part). This type of infection has been reported to increase as a function of time, particularly among women with immune-compromise conditions (Zarrin and Mahmoudabadi, 2009). Until recently, treatment of patients with candidacies infection has relied on antibiotics with topical properties. Itrakonazol, flukonazol, and nystatin, for examples, are dominant types of antibiotics used in the therapies (Salehei *et al.*, 2012). To reduce bad side effects of antibiotics, alternative approaches to control candidacies infection, such as application of probiotics has been intensively studied in the last two decades (Martinez *et al.*, 2009). Based on this background, potential probiotic candidates antagonistic against *C. albicans* were isolated, screened, and characterized in this research. All probiotic candidates were isolated from fermented foods, such as *tape ketan* and *kimchi* purchased from supermarkets around Denpasar city.

Materials and Method

Isolation of probiotic candidates

This was done by applying dilution and spread method as specified in Ramona *et al.* (2015).

Screening of probiotic candidates antagonistic against *C. albicans*

This was assessed by applying the dual culture assay as specified in Ramona (2003).

Test for resistance to acidic conditions

These tests adopted the method applied by Sujaya *et al.* (2008).

Test for conversion of colic acid (CA) into deoxycolic acid (DCA)

This was done by applying the method as specified in Sintyadewi *et al.* (2015).

Results

- Some 46 lactic acid bacteria (LAB) were successfully isolated
- Seven isolates showed antagonistic activity against *C. albicans* with various degree of inhibition zones *in vitro* (Figure 1).
- All resistance to acidic conditions or convert CA into DCA

Figure 1:*In vitro* inhibition zones produced by LAB isolates on *C. albicans*

Table 2: Resistance of 7 LAB isolates against acidic conditions (low pH)

Isolate codes	Growth indication (OD reading at λ 660 nm)*			
	Control (pH 6.5)	pH 2	pH 3	pH 4
Kim 26	+++(2.44±0.36)	+++(2.23±0.20)	+++(2.59±0.13)	+++(2.61±0.13)
Kim 45	+++(2.66±0.01)	+(0.45±0.35)	+++(2.61±0.07)	+++(2.69±0.06)
Tape 3	+++(2.43±0.06)	+++(1.36±0.12)	+++(2.43±0.01)	+++(2.45±0.01)
Tape 5	+++(2.34±0.04)	++(0.51±0.45)	+++(2.38±0.02)	+++(2.39±0.01)
BD01	+++(2.34±0.22)	+++(1.98±0.30)	+++(2.28±(0.15)	+++(2.40±0.19)
BD02	+++(2.50±0.03)	+++(2.32±0.27)	+++(2.49±0.08)	+++(2.53±0.05)
BD04	+++(2.26±0.14)	+++(2.15±0.0.07)	+++(2.20±0.12)	+++(2.26±0.19)

*Each absorbance value in Table 2 ±standard deviation is an average of triplicates
- = not resistance against acidic conditions (OD reading < 0.1)
+=slightly resistance against acidic conditions (OD reading 0.1 – 0.5)
++= resistance against acidic conditions (OD reading 0.51 – 1.0)
+++= highly resistance against acidic conditions (OD reading > 1.0)

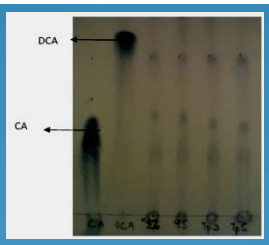

Figure 2: Chromatogram of test for ability of LAB isolates to convert CA into DCA. None convert CA into DCA

Conclusion

Some 46 LAB isolates were isolated from samples of *tape ketan* and *kimchi* and 7 of those isolates inhibitory to *C. albicans in vitro*. All of these isolates were resistant to ow pH conditions (up to pH 2). In the test of conversion of CA into DCA on 4 potential isolates, none of them showed this ability.

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CERTIFICATE OF PARTICIPATION

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This is to certify that

Drs. Yan Ramona, M.App.Sc.,Ph.D.

has participated as

Presenter

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