



# OVERVIEW OF KNOWLEDGE, ATTITUDE AND BEHAVIOUR LEVEL AMONG MEDICAL STUDENTS OF UNIVERSITAS SUMATERA UTARA TOWARDS *Lactobacillus casei* strain Shirota IN PROBIOTIC DRINK

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**Abstract. Introduction.** Probiotics are widely used in health research because it is considered to be beneficial for human health. *Lactobacillus casei* strain Shirota is one of the lactic acid bacteria which mostly found in commercial drink. This bacteria can improve gut's immunity towards pathogen by producing bacteriocin which is able to lower the pH in the gut. However it was found inappropriate probiotic product storing, inappropriate way of consuming probiotic drink and the mixing of probiotic drink with other drinks randomly could disrupt the viability of probiotic bacteria which would reduce the benefits of the probiotic drink. **Aim.** The aim of this study is to observe the knowledge, attitude and behaviour level from students of faculty of medicine Universitas Sumatera Utara towards *Lactobacillus casei* strain Shirota in probiotic drink. **Method.** This is a descriptive research with cross sectional approach. The research is collecting primary data using questionnaire about knowledge, attitude and behaviour level towards *Lactobacillus casei* strain Shirota in probiotic drinks. **Result.** From 152 respondents who met all the criteria, there are 48,7% respondents have good knowledge level, 45,4% sufficient and 5,9% deficient. Moreover, there are 22,4% respondents have good attitude level, 47,4% sufficient and 30,3% deficient. Also, there are 77% respondents have good behaviour level, 21% sufficient and 2,0% deficient. **Conclusion.** Majority of respondents have good knowledge level, sufficient attitude level and good behaviour level towards *Lactobacillus casei* strain Shirota.

**Keyword:** Probiotic Bacteria, *Lactobacillus casei* strain Shirota, Knowledge, Attitude and Behaviour Level.

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## 1 Introduction

Probiotic bacteria is a live microorganism which benefit to the host if consumed at adequate amount [1]. But not all of the bacteria strains can be used as probiotics [2]. It is because there are only a few kind of strains which are able to pass the gastric acid and bile salts [3].

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In 1930, Dr. Minoru Shirota found a bacteria and named it *Lactobacillus casei* strain Shirota. This strain can pass the digestive tract very well. It was proven with a large number of bacteria which was found in people feces who consumed a product containing this strain of bacteria. And it was strengthened by another experimental research by Bioteknologi Biosains Indonesia which shown *Lactobacillus casei* strain Shirota was able to survive in bile salts with 15% concentrations of bile salts and gastric acid within pH 2 [4].

*Lactobacillus* and *Bifidobacteria* have the ability to increase body immunity towards pathogen by producing antimicrobes components (bacteriocin) like acidolin, acidophylin and lactocidin which tend to have broad spectrum antibacteria towards both gram positive and negative bacteria. A result from a research which isolating *L. casei* bacteria shown this type of bacteria was able to inhibit the growth of pathogen – causing - diarrhea bacteria like *S. aureus*, *E. fecalis*, *E. coli* [4].

*Lactobacillus casei* strain Shirota is able to reduce the severity of constipation. It was proven by a research which was conducted by Ou *et al.* There was defecation frequency and feces consistency improvement in some patient who consumed probiotics. A reduction pH in colon is caused by organic acid (butyric acid, propionic acid and lactic acid) which is produced by normal floras in the gut. They are able to stimulate motility in digestive system. Also, the organic acid is able to reabsorb fluid and electrolytes and change osmotic pressure at the same time [5].

There are some factors which are able to affect the viability of *Lactobacillus casei* strain Shirota like incubation, storage temperature, inoculation ratio, heat-process, interaction with other probiotics or integration of mentioned factors [6], so it can be concluded the amount of *Lactobacillus casei* strain Shirota bacteria which contained in probiotic drinks could decrease depending on those factors.

The researcher interested to do the research about knowledge, attitude and behaviour level among 1<sup>st</sup> year, 2<sup>nd</sup> year and 3<sup>rd</sup> year generation students at Faculty of Medicine towards *Lactobacillus casei* strain Shirota in probiotic drink because there are still a lot of people who store probiotic drink inappropriately, mixing probiotic drink with other drinks randomly without knowing the interaction between them and people who drink probiotic drink in a inappropriate way. So hopefully this research can give some education to student at Medical Faculty of Universitas Sumatera Utara and also can contribute to educate general public about characteristic of *Lactobacillus casei* strain Shirota in probiotic drink, appropriate attitude and behaviour towards this issue.

## 2 Method

This research is a descriptive study with cross sectional design. This research was conducted from August until November 2021. Population of this research was 1<sup>st</sup> year, 2<sup>nd</sup> year and 3<sup>rd</sup> year

Medical Students of Universitas Sumatera Utara. Minimal total sample required in this research were 97 people with inclusion criteria are 1<sup>st</sup> year, 2<sup>nd</sup> year and 3<sup>rd</sup> year Medical Students of Universitas Sumatera Utara students who still officially registered as active students at Faculty of Medicine, Universitas Sumatera Utara and filled the informed consent. The exclusion criteria was the students who filled the questionnaire over 15 minutes. This research instrument was using knowledge, attitude and behaviour questionnaire which has been validated and tested for reliability. The questionnaire was made in a google form and timer within to see how long the time which the respondents used to fill the questionnaire. The questionnaire was spreaded to every group of the generation (1<sup>st</sup> year, 2<sup>nd</sup> year and 3<sup>rd</sup> year).

### 3 Result

Based on the collected data, there are 156 respondents who has filled the questionnaire but 4 respondents are excluded because they filled the questionnaire over than 15 minutes so there are only 152 respondents data which can be used in this research.

Knowledge level is divided into 3 type of criteria in which are good, sufficient and deficient.

**Table 1** Frequency distribution of respondent's knowledge level towards *Lactobacillus casei* strain Shirota in probiotic drink

Knowledge Level	Frequency (N)	Percentage (%)
Good	74	48,7
Sufficient	69	45,4
Deficient	9	5,9
<b>Total</b>	<b>152</b>	<b>100</b>

Based on **Table 1**, there are 74 respondents (48,7%) who have good knowledge level, 69 respondents (45,4%) have sufficient knowledge level and nine respondents (5,9%) have deficient knowledge level towards *Lactobacillus casei* strain Shirota in probiotic drink.

**Table 2** Frequency distribution of respondent's knowledge level towards *Lactobacillus casei* strain Shirota based on generation year

Variables (%)	Knowledge Level			Total	Good
		Sufficient (%)	Deficient (%)		
3rd	31 (58,5)	20 (37,7)	2 (3,8)	53	
2nd	22 (45,8)	25 (52,1)	1 (2,1)	48	
1st	22 (43,1)	26 (51,0)	3 (5,9)	51	

<b>Total</b>	75	71	6	152
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According to **Table 2**, from the 3<sup>rd</sup> year generation students there are 31 respondents (58,5%) have good knowledge level, 20 respondents (37,7%) have sufficient knowledge level and 2 respondents (3,8%) have deficient knowledge level. From the 2<sup>nd</sup> year generation students, there are 22 respondents (45,8%) have good knowledge level, 25 respondents (52,1%) have sufficient knowledge level and only 1 respondent (2,1%) has deficient knowledge level. And from the 1<sup>st</sup> year generation students there are 22 respondents (43,1%) have good knowledge level, 26 respondents (51,0%) have sufficient knowledge level and 3 respondents (5,9%) have deficient knowledge level towards *Lactobacillus casei* strain Shirota in probiotic drink.

Attitude level was divided into 3 type of criteria in which are good, sufficient and deficient.

**Table 3** Frequency distribution of respondent's attitude level towards *Lactobacillus casei* strain Shirota in probiotic drink.

Attitude Level	Frequency (N)	Percentage (%)
<b>Good</b>	34	22,4
<b>Sufficient</b>	72	47,4
<b>Deficient</b>	46	30,3
<b>Total</b>	152	100

Based on **Table 3**, there was 34 respondents (22,4%) have good attitude level, 72 respondents (47,4%) have sufficient attitude level and 46 respondents (30,3%) have deficient attitude level towards *Lactobacillus casei* strain Shirota in probiotic drink.

**Table 4** Frequency distribution of respondent's attitude level towards *Lactobacillus casei* strain Shirota based on generation year

Variables	Attitude Level			Total
	Good (%)	Sufficient (%)	Deficient (%)	
<b>3<sup>rd</sup></b>	18 (33,9)	24 (45,3)	11 (20,8)	53
<b>2<sup>nd</sup></b>	14 (29,2)	24 (50,0)	10 (20,8)	48
<b>1<sup>st</sup></b>	8 (15,7)	34 (66,7)	9 (17,6)	51
<b>Total</b>	40	82	30	152

According to **Table 4**, from 3<sup>rd</sup> students, there was 18 respondents (33,9%) have good attitude level, 24 respondents (45,3%) have sufficient attitude level and 11 respondents (20,8%) have deficient attitude level. From 2<sup>nd</sup> years generation students, there was 14 respondents (29,2%) have good attitude level, 24 respondents (50,0%) have sufficient attitude level and 10 respondents (20,8%) have deficient attitude level. And from the 1<sup>st</sup> year generation students, there was 8 respondents (15,7%) have good attitude level, 34 respondents (66,7%) have sufficient attitude level and 9 respondents (17,6%) have deficient attitude level towards *Lactobacillus casei* strain Shirota in probiotic drink.

The last component of this research was behaviour level. Behaviour level was divided into 3 type of criteria in which are good, sufficient and deficient.

**Table 5** Frequency distribution of respondent's behaviour level towards *Lactobacillus casei* strain Shirota in probiotic drink

Behaviour Level	Frequency (N)	Percentage (%)
Good	117	77,0
Sufficient	32	21
Deficient	3	2,0
Total	152	100

Based on **Table 5**, there are 117 respondents (77,0%) have good behaviour level, 32 respondents (21,0%) have sufficient behaviour level and 3 respondents (2,0%) have deficient behaviour level towards *Lactobacillus casei* strain Shirota in probiotic drink.

**Table 6** Frequency distribution of respondent's behaviour level towards *Lactobacillus casei* strain Shirota in probiotic drink based on generation year.

Variables	Behaviour Level			Total
	Good (%)	Sufficient (%)	Deficient (%)	
3 <sup>rd</sup>	36 (67,9)	16 (30,2)	1 (1,9)	53
2 <sup>nd</sup>	41 (85,4)	6 (12,5)	1 (2,1)	48
1 <sup>st</sup>	39 (76,5)	11 (21,6)	1 (1,9)	51
Total	116	33	3	152

According to **Table 6**, from 3<sup>rd</sup> year generation students, there are 36 respondents (67,9%) have good behaviour level, 16 respondents (30,2%) have sufficient behaviour level and 1 respondent (1,9%) have deficient behaviour level. From 2<sup>nd</sup> year generation students, there are 41 respondents (85,4%) have good behaviour level, 6 respondents (12,5%) have sufficient behaviour level and 1 respondent (2,1%) have deficient behaviour level. From 1<sup>st</sup> year generation students, there are 39 respondents (76,5%) have good behaviour level, 11 respondents (21,6%) have sufficient behaviour level and 1 respondent (1,9%) have deficient behaviour level.

#### 4 Discussion

In this research, based on the data shown in **Table 1**, we can conclude the knowledge level was dominated by good knowledge level. And according to the data shown in **Table 2**, good knowledge level was dominated by 3<sup>rd</sup> year generation students. The result is relevant to a research about knowledge level in health workers which was conducted by Fijan *et al.*. It was found that good knowledge level dominated in this research. Also, good knowledge level was dominated by doctor or dentist, followed by pharmacist and another paramedic staff like physiotherapist [7]. So

it can be concluded, the respondent's knowledge level can be affected by education, work and experiences [8]. Knowledge level of respondents about probiotics are given in Microbiology subject and also the respondent's personal experience both internally and externally.

Another component in this research was attitude level. Based on the data shown in **Table 3**, we can conclude the attitude level was dominated by sufficient attitude level. Attitude level showing someone's personal perception towards something which has not being implemented. This remarks attitude is the beginning of behaviour [9]. In this research, it was found respondent's attitude level was sufficient. Eventhough the domination of knowledge level was good, it does not guarantee the attitude level would be good too. It indicates the majority of respondents have good knowledge about probiotics but still do not have appropriate personal judgement towards probiotics and its implementation in daily life. Personal judgement can be affected by some factors included personal experiences, peer experiences [8]. And according to the data shown in **Table 4**, good attitude level was dominated by 3<sup>rd</sup> year generation students. Good attitude level showing the correspondents have an appropriate personal judgements towards probiotics. It can be concluded education level have a role in someone's personal judgement towards probiotics.

Last component of this research was behaviour level towards *Lactobacillus casei* strain Shirota in probiotic drink. Based on the data shown in **Table 5**, it can be concluded the behaviour level was dominated by good behaviour level. And according to the to the data shown in **Table 6**, good behaviour level was dominated by 2<sup>nd</sup> year generation students. Good behaviour level showing how many respondents implemented their perception into daily life. All the students have received information about probiotics in microbiology subject so this indicates the majority of respondent's good knowledge level are implemented into the good behaviour too. It is interesting because referring to the results above, majority of respondent's attitude level were sufficient meanwhile the knowledge and behaviour level were good.

## 5 Conclusion

Based on this research, it can be concluded the domination of knowledge level of all respondents were good. The overall majority of respondent's attitude level were sufficient. Eventhough the majority of respondent's have good knowledge level, but some factors could affect personal judgement included knowledge and personal experience. And last component was behaviour level. Majority of respondent's behaviour level were good. So further investigation are needed to identify another factors which can affect the knowledge, attitude and behaviour level of respondents towards *Lactobacillus casei* strain Shirota.

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