PENGARUH MENIUP MAKANAN PANAS TERHADAP PENINGKATAN JUMLAH KOLONI BAKTERI

by Fathimah Fathimah

Submission date: 29-Jan-2022 02:41AM (UTC+0000)
Submission ID: 1750389058
File name: IUP_MAKANAN_PANAS_TERHADAP_PENINGKATAN_JUMLAH_KOLONI_BAKTERI.pdf (932.67K)
Word count: 1772
Character count: 9009

Darussalam Nutrition Journal, Nov 2021, 5(2):164-167 *ISSN 2579-8588*
E-ISSN 2579-8618

PENGARUH MENIUP MAKANAN PANAS TERHADAP PENINGKATAN JUMLAH KOLONI BAKTERI

The Effect of Blowing on The Hot Food Increasing Bacteria Colonies

Fathimah [1]*, Lia Mustika[1], Inma Y Setyorini[1]

[1]Prodi Ilmu Gizi Fakultas Ilmu Kesehatan Universitas Darussalam Gontor
*email : fathimah@unida.gontor.ac.id

ABSTRAK

Meniup makanan dan minuman panas merupakan kebiasaan pada masyarakat yang bertujuan untuk mempercepat makanan menjadi dingin. Namun, hal tersebut dapat menyebabkan kontaminasi makanan dengan mikroorganisme, salah satunya adalah bakteri. Penelitian ini bertujuan untuk mengetahui perbedaan antara jumlah koloni bakteri pada makanan panas yang ditiup dan tidak ditiup. Penelitian ini menggunakan metode eksperimental Rancangan Acak Kelompok dengan perlakuan ditiup dan tidak ditiup, masing-masing perlakuan dibuat dua kali pengulangan. Perhitungan jumlah koloni bakteri dihitung dengan metode *total plate count* (TPC) dan alat *coloni counter*, lalu diuji statistik dengan *independent t test*. Hasil penelitian menunjukan ada perbedaan yang bermakna (p = 0,001) rata-rata jumlah koloni bakteri antara sampel yang ditiup (1,3 x 10^3 CFU (*Colony Forming Unit*)/ml untuk 12 jam, 1,37 x 10^3 CFU/ml untuk 24 jam) dan tidak ditiup (1,3 x 10^2 CFU/ml untuk 12 jam & 2,1 x 10^2 CFU/ml untuk 24 jam), jumlah rata-rata koloni bakteri pada sampel yang ditiup lebih besar daripada sampel yang tidak ditiup. Kesimpulan: ada perbedaan yang bermakna jumlah koloni bakteri antara makanan panas yang ditiup dan tidak ditiup.

Kata Kunci : makanan panas, meniup, mikrobiologi

ABSTRACT

Blowing on hot foods and drinks is a habit in society which is aim to speed up the cooling of food. However, it can cause food contamination with microorganisms, one of them is bacteria. This study aims to determine the difference between the level of microorganism contamination in hot blown and unblown food. This study used a randomized block design experimental method with blown and non-blown treatments. Each treatment was made duplo. The calculation of the number of bacteria colonies was calculated by total plate count (TPC) method and coloni counter. The results showed that there was a significant difference (p = 0.001) the number of bacteria colonies between the samples that were blown on (1,3 x 10^3 CFU (Colony Forming Unit)/ml for 12 hours, 1,37 x 10^3 CFU/ml for 24 hours) and not blown on (1,3 x 10^2 CFU/ml for 12 hours & 2,1 x 10^2 CFU/ml for 24 hours. The number of bacteria colonies in the blown on samples was larger than the not blown on samples. Conclusion: There was a significant difference in the number of bacteria colonies between the blown on hot food, and not blown.

Keywords : blown on, hot food, microbiology

INTRODUCTION

Eating and drinking is a primary human activity to be able to do the daily work. There is a habit that occurs in the community, namely they blow hot food or drinks before consumption. It is provided in a preliminary study conducted among 30 students of UNIDA Gontor, and it was found that 86.67% blowing hot food and drinks before being consumed.

According to microbiological perspective, food is the best media for the development of several types of microorganisms (Maryam, 2015). And the mouth is one of the many contain microorganisms that can be released through the air from the mouth with the blowing or sneezing and coughing. Air from mouth that contains microorganisms can be bound and dissolved in the food and beverages that blown. Although not all microorganisms harmful to humanity, some microorganisms can cause disease or produce toxins in the foods that can cause poisoning and disease (Kuswiyanto,2016). The mouth is also one of the entrance of microorganisms into the human body through the food diet (Indrati R, 2014).

This study aims to find out whether there is a difference in the number of and count the number of microorganisms in the hot food and drink that have been blown and not blown

MATERIALS AND METHODS

2.1. Materials

The materials used in this study were rice porridge, 0,9% NaCl, NA (Nutrient Agar), and 70% alcohol. The equipment used an electric autoclave, small pot, spatula, vortex, petri dish, volume pipette, test tube, incubator, colony counter, digital scale, and laminar air flow.

2.2, Design place and time

The design of this study was an experimental study used a randomized block design with two treatments. P1 which was treated with blown air from the mouth for 15 seconds; P2 was not blown on and the petri dish opened for 15 seconds. This research was carried out in the Microbiology Laboratory at Nutrition Laboratory, Faculty of Health Science, University of Darussalam Gontor.

2.2. The Procedures

the first stage, 25 g of food samples were taken, then put into 225 ml of sterile 0.9% NaCl solution and homogenized using a sterile blender for ±3-5 minutes. 1 ml of this suspension is a dilution level of 10^{-1}. The second stage, the samples with a dilution of 10^{-1} were put 1 ml into petri dish then mixed with 15 ml NA (Nutrient Agar) media which was still liquid by pour plate method and ready to be given treatment. The sample was divided into two groups, each group was made in duplicate. The third stage, the hot and liquid samples were treated, P1 was blown for 15 seconds and P2 was not blown (only opened for 15 seconds). The fourth stage was incubation of the sample for 12-24 hours in an incubator at 37^{o}C. The final stage was counted the number of bacteria colonies by using the total colony counter.

2.3 Counting of bacteria colonies and data analysis

The calculation of the number of bacteria colonies used colony counter.

The calculation of Total Plate Count (TPC) aimed to determine the total number of bacteria colonies in both groups.

TPC = number of colonies x 1/dilution factor

Data analysis was performed used a computer statistic software program. Statistical analysis used the independent t test.

RISULT AND DISCUSSION

The results of the calculation the number of bacteria colonies contained in the samples after 12 and 24-hour observation. there are in the table below:

Tabel 1. Number of Bacteria Colonies P1 and P2

Media	Average number of bacteria colonies		*p**
	12 hours observation mean ± SD	24 hours observation mean ± SD	
P1 (blown) n=2	$1,3 \times 10^3 \pm 7.07$	$1,37 \times 10^3 \pm 3.5$	0.001
P2 (not blown) n=2	$1,3 \times 10^2 \pm 0.14$	$2,1 \times 10^2 \pm 0.28$	

*'*Independent t test*

Table 1 shows that the average number of bacterial colonies in the blown-on sample was greater than that in the unblown-on sample, both at 12 hours and 24 hours of incubation. The results of statistical tests used an independent t-test, there was a significant difference ($p<0.05$) in the number of bacterial colonies between the blown-on and unblown-on samples. The results of the calculation of the number of bacterial colonies and statistical tests found that blowing hot food can increase the number of bacterial colonies on food.

It happened because every air that came out of the mouth contains a lot of oral microorganisms that would blend with the blown-on food. Microorganisms that contaminated food cause food changes, such as chemical changes and microbiological changes so that food cannot be eaten or can even be toxic (Michael, 2014).

The surface of the oral cavity contains many microbiomes (Shaw PL, 2017; Priya ND, 2019) and is a breeding ground for bacteria. On the surface of teeth that were not clean, bleeding gums, or salivary glands there are no less than 100 million bacteria per millimeter (Jessica, 2020). If the health of the oral cavity is not maintained, then the food residue left in the oral cavity can cause the growth of bacteria, because some pieces of food are good nutrients for bacteria.

If the mouth was filled with bacteria, it can contaminate food and drinks that are exposed to the air that comes out of the mouth (blown). The air that comes out of the mouth can reduce the temperature of the food to a lower level which is in accordance with the temperature of the growth of bacteria carried through the air blown from the mouth. This can cause food born disease.

Staphylococcus aureus is one of the bacterial sources of food-born disease that lives as a saprophyte in the mucus secretion channels of the human body such as the nose, mouth, and throat and

can be expelled when coughing, sneezing, and blowing. Staphylococcus usually lives as a parasite in humans and animals, sometimes it can cause serious infections (Ijong (2015).

Staphylococcus aureus is one of the bacteria that are quite immune to other microorganisms and is resistant to heating at a temperature of 60ºC for 30 minutes. S. aureus can produce enterotoxins that cause food poisoning in humans and animals. The toxins produced can damage the walls of the small intestine and cause intestinal tissue secretion (Bhunia, 2018), this is one kind of food born diseases.

CONCLUSION

There was a significant difference in the number of bacteria colonies between blown on and not-blown samples. The number of bacteria colonies on the hot food that was blown on greater than not blown.

REFERENCES

Bhunia AK. 2018. Foodborne microbial pathogens: mechanisms and pathogenesis. Spinger. Springer, New York, NY

Ijong FG. 2015. Mikrobiologi Perikanan dan Kelautan. Jakarta (ID): Rineka Cipta.

Indrati Retno, Gardjito Murdijati. 2014. Pendidikan Konsumsi Pangan. PT. Fajar Interpratama Mandiri Kencana Prenadamedia Group. Jakarta.

Jessica L Mark Welch, S.Tabita Ramírez-Puebla, Gary G.Borisy. 2020. Oral Microbiome Geography: Micron-Scale Habitat and Niche. Cell Host & Microbe. Volume 28, Issue 2, 12 August 2020, p160-168.

Kuswiyanto. 2016. Bakteriologi 1. Buku Ajar Analisis Kesehatan. EGC. Jakarta.

Maryam, Alfiyanti Dera. 2016. Oral Hygiene Menggunakan Madu Menurunkan Risiko Pertumbuhan Bakteri Di Mulut Melalui Netralisasi Ph Saliva. p.379-385. The 4th Univesity Research Coloquium. Semarang

Michael J, Pelczar Jr, E.C.S. Chan. 2014. Dasar-Dasar Mikrobiologi. Mouth: A Sticky Situation. UI Press. Jakarta

Mosaddad SA, Elahe Tahmasebi, Alireza Yazdanian, Mohammad Bagher Rezvani, Alexander Seifalian, Mohsen Yazdanian & Hamid Tebyanian. 2019. Oral microbial biofilms: an update. European Journal of Clinical Microbiology & Infectious Diseases volume 38, p.2005–2019.

Priya Nimish Deo and Revati Deshmukh. 2019. Oral microbiome: Unveiling the fundamentals. Journal of Oral and Maxillofacial Pathology. 23(1). p 122-128.

Shaw P.Liam, et all. 2017. The Oral Microbiome. Portland Press.

Wahyudi D, Aurino RA Djamaris. 2018. Metode Statistik Untuk Ilmu dan Teknologi Pangan. UB Press. Jakarta.

PENGARUH MENIUP MAKANAN PANAS TERHADAP PENINGKATAN JUMLAH KOLONI BAKTERI

ORIGINALITY REPORT

7%	5%	2%	1%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

MATCH ALL SOURCES (ONLY SELECTED SOURCE PRINTED)

1%

★ ejournal.unisba.ac.id

Internet Source

Exclude quotes	On	Exclude matches	Off
Exclude bibliography	On		

PENGARUH MENIUP MAKANAN PANAS TERHADAP PENINGKATAN JUMLAH KOLONI BAKTERI

GRADEMARK REPORT

FINAL GRADE

/1000

GENERAL COMMENTS

Instructor

PAGE 1

PAGE 2

PAGE 3

PAGE 4