

## BAB 7

### KESIMPULAN DAN SARAN

#### 7.1 Kesimpulan

- Peningkatan kadar gula darah pada kelompok yang mengonsumsi jus buah pir lebih tinggi secara bermakna.
- Tidak terdapat perbedaan nilai gula darah tertinggi dan pada menit ke 15, 30, dan 60 pada kelompok yang mengonsumsi buah maupun jus buah pir.
- Waktu untuk mencapai nilai gula darah tertinggi lebih lama pada kelompok yang mengonsumsi jus buah pir.
- Peningkatan kadar gula darah yang lebih tinggi pada kelompok yang mengonsumsi jus buah pir pada menit ke 15 dan 30.
- Total peningkatan lebih tinggi yang lebih lama pada jus buah pir.

Tidak terdapat perbedaan kadar gula darah yang tertinggi dan kadar gula darah pada menit ke 15,30, dan 60, tetapi peningkatan kadar gula darah pada konsumsi jus buah pir lebih tinggi pada menit ke 15 dan 30 berbeda secara bermakna. Pada konsumsi buah pir, kadar gula darah mencapai puncaknya pada menit ke 15 dan setelah itu mulai menurun, sedangkan pada konsumsi jus buah pir, kadar gula darah yang lebih tinggi secara signifikan dibandingkan dengan konsumsi buah pir terus meningkat dan dipertahankan lebih lama pada kadar yang lebih tinggi.

## **7.2 Saran**

### **7.2.1 Bagi Ilmu Pengetahuan**

Hasil dari penelitian ini dapat menambahkan ilmu pengetahuan dan berguna untuk peningkatan kesehatan.

### **7.2.2 Bagi Institusi Pendidikan**

Hasil dari penelitian ini dapat berguna dan memperkaya hasil-hasil penelitian bagi institusi pendidikan

### **7.2.3 Bagi Masyarakat**

Peneliti menyarankan untuk lebih sering mengonsumsi buah dibandingkan jus buah untuk manfaat buah yang bisa didapatkan dengan lebih efisien dan karena peningkatan kadar gula yang lebih tinggi pada konsumsi jus buah dan teori-teori yang telah dikemukakan sebelumnya. Selain itu jus buah termasuk makanan olahan sehingga sebisa mungkin konsumsinya dapat dikurangi, terutama bagi penderita toleransi glukosa terganggu dan diabetes melitus.

### **7.2.4 Bagi peneliti selanjutnya**

Saran yang dapat peneliti berikan adalah desain yang lebih baik untuk mengatasi keterbatasan penelitian ini, misalnya penelitian dengan desain *true eksperimental*. Saran lainnya adalah melakukan penelitian pada buah yang lain atau pada subjek yang mengalami diabetes melitus atau pada subjek dengan toleransi glukosa tertanggu.

## **DAFTAR PUSTAKA**

1. Kementerian Kesehatan RI. Undang-Undang Republik Indonesia no. 36 tahun 2009 tentang kesehatan [Internet]. 2009. p. 111. Available from: [http://www.depkes.go.id/resources/download/general/UU Nomor 36 Tahun 2009 tentang Kesehatan.pdf](http://www.depkes.go.id/resources/download/general/UU_Nomor_36_Tahun_2009_tentang_Kesehatan.pdf)
2. World Health Organization. Global status report on noncommunicable diseases 2010. World Heal Organ [Internet]. 2011;176. Available from: [http://apps.who.int/iris/bitstream/10665/44579/1/9789240686458\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/44579/1/9789240686458_eng.pdf)
3. WHO. Cardiovascular diseases (CVDs) [Internet]. 2017 [cited 2018 Jun 1]. Available from: [http://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-\(cvds\)](http://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds))
4. WHO. Diabetes [Internet]. 2017 [cited 2018 Jun 1]. Available from: <http://www.who.int/news-room/fact-sheets/detail/diabetes>
5. Arthur C. Guyton JEH. Buku ajar fisiologi kedokteran. 12th ed. Singapura: Elsevier Pte Ltd; 2014. 1017-1027 p.
6. Harvard T.H Chan. Healthy eating plate & healthy eating pyramid [Internet]. [cited 2018 Mar 2]. Available from: <https://www.hsph.harvard.edu/nutritionsource/healthy-eating-plate/>
7. Kementerian Kesehatan RI. Pedoman gizi seimbang. Riskesdas [Internet]. 2014;99. Available from: [http://gizi.depkes.go.id/download/Pedoman Gizi/PGS Ok.pdf](http://gizi.depkes.go.id/download/Pedoman_Gizi/PGS_Ok.pdf)

8. Glycemic Index, Glycemic Load and Glycemic Response: An International Scientific Consensus Summit Stresa, Italy • June 7. 2013;1–10. Available from: [https://www.nmcd-journal.com/article/S0939-4753\(15\)00127-1/pdf](https://www.nmcd-journal.com/article/S0939-4753(15)00127-1/pdf)
9. Sharma SP, Chung HJ, Kim HJ, Hong ST. Paradoxical effects of fruit on obesity. *Nutrients* [Internet]. 2016;8(10):1–16. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5084020/pdf/nutrients-08-00633.pdf>
10. Bazzano LA, Li TY, Joshipura KJ, Hu FB. Intake of fruit , vegetables , and fruit juices and risk of diabetes in women. *Diabetes Care* [Internet]. 2008;31(7):1311–7. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2453647/pdf/1311.pdf>
11. Xi B, Li S, Liu Z, Tian H, Yin X, Huai P, et al. Intake of fruit juice and incidence of type 2 diabetes: a systematic review and meta-analysis. *PLoS One* [Internet]. 2014;9(3). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3969361/pdf/pone.0093471.pdf>
12. Tey SL, Lee DEM, Henry CJ. Fruit form influences postprandial glycemic response in elderly and young adults. *J Nutr Health Aging* [Internet]. 2017;21(8):887–91. Available from: <https://link.springer.com/article/10.1007/s12603-017-0880-9>
13. Li X, Li X, Wang T, Gao W. Nutritional composition of pear cultivars (*pyrus spp.*) [Internet]. *Nutritional Composition of Fruit Cultivars*. Elsevier Inc.; 2015. 573-608 p. Available from: <http://dx.doi.org/10.1016/B978-0->

12-408117-8.00024-6

14. James-Martin G, Williams G, Stonehouse W, Callaghan O, Noakes M. Health and nutritional properties of pears ( Pyrus ): a literature review. Food Nutr Flagship, Hort Innov Apple Pear Aust Ltd (APAL) [Internet]. 2015;(October). Available from: <http://rediscoverthepear.com.au/wp-content/uploads/2017/05/Pears-Health-Study-AP15010-Final-Report-Complete.pdf>
15. Hancock JF, Lobos GA. Pears [Internet]. Temperate Fruit Crop Breeding: Germplasm to Genomics. 2008. 299-335 p. Available from: [https://www.researchgate.net/profile/Gustavo\\_Lobos/publication/257826794\\_Pears/links/00b7d525ecda5a71a7000000/Pears.pdf?origin=publication\\_detail](https://www.researchgate.net/profile/Gustavo_Lobos/publication/257826794_Pears/links/00b7d525ecda5a71a7000000/Pears.pdf?origin=publication_detail)
16. FAO. FAOSTAT [Internet]. Available from: <http://www.fao.org/faostat/en/#data/QC/visualize>
17. Joan Webster-Gandy, Angela Madden MH, editor. Gizi dan dietetika. 2nd ed. Jakarta: Penerbit Buku Kedokteran EGC; 2014.
18. Lunde MSH. The postprandial blood glucose concentration as influenced by some changes in type and amount of carbohydrate in the meal and by post meal slow walking [Internet]. Faculty of Medicine, University of Oslo No. 1347. 2012. 13-16 p. Available from: <https://www.duo.uio.no/bitstream/handle/10852/34960/dravhandling-lunde.pdf?sequence=1&isAllowed=y>
19. Beck ME. Ilmu gizi dan diet. Dr. Andri Hartono D.A.Nutr. DKSKS, editor.

Yogyakarta: Yayasan Essentia Medica (YEM); 2011. 84-88 p.

20. World Health Organization. Carbohydrate in human nutrition report of a joint WHO/FAO expert consultation [Internet]. 1998 [cited 2018 Apr 22].  
p. FAO food and nutrition paper-66. Available from:  
<http://www.fao.org/docrep/W8079E/W8079E00.htm>
21. Arif A Bin, Budiyanto A, Hoerudin. Nilai indeks glikemik produk pangan dan faktor-faktor yang memengaruhinya. J Litbang Pert [Internet]. 2013;32(3):91–9. Available from:  
<http://ejurnal.litbang.pertanian.go.id/index.php/jppp/article/viewFile/1347/121>
22. Shrayyef MZ, Gerich JE. Normal glucose homeostasis. In: Poretsky L [Internet]. Springer, Boston, MA; 2010. p. 19–32. Available from:  
<https://pdfs.semanticscholar.org/5090/80a6c63fda6127f4a2dabee40dbf045fa68f.pdf>
23. Vicente AR, Manganaris GA, Sozzi GO, Crisoto CH. Nutritional quality of fruits and vegetable. In: Postharvest Handling:A Systems Approach [Internet]. 2009. p. 58–93. Available from:  
<http://ucanr.edu/datastoreFiles/234-1260.pdf>
24. Pears U. Pear nutrition [Internet]. [cited 2018 Mar 7]. Available from:  
<http://usapears.org/pear-nutrition/>
25. R.P. Bates, J.R. Morris PGC. Principle and practises small and medium scale fruit juice processing. Food Organ United Nations [Internet]. 2001;1–219. Available from: <http://www.fao.org/3/a-y2515e.pdf>

26. Magwaza LS, Opara UL. Analytical methods for determination of sugars and sweetness of horticultural products-A review. *Sci Hortic* (Amsterdam) [Internet]. 2015;184:179–92. Available from:  
<http://dx.doi.org/10.1016/j.scienta.2015.01.001>
27. Clemens R, Drewnowski A, Ferruzzi MG, Toner CD, Welland D. Squeezing fact from fiction about 100% fruit juice. *Adv Nutr An Int Rev J* [Internet]. 2015;6(2):236S–243S. Available from:  
<http://advances.nutrition.org/cgi/doi/10.3945/an.114.007328>
28. PERKENI. Konsensus Pengendalian dan Pencegahan Diabetes Melitus Tipe 2 di Indonesia 2015 [Internet]. Perkeni. 2015. 78 p. Available from:  
<http://pbperkeni.or.id/doc/konsensus.pdf>
29. Kalyani, Rita Rastogi , MD M, Egan, Josephine M. M. Diabetes and altered glucose metabolism with aging. 2014;(410):1–17. Available from:  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3664017/pdf/nihms447319.pdf>
30. Jin K. Modern Biological Theories of Aging. *Aging Dis* [Internet]. 2010;1(2):72–4. Available from:  
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2995895/>
31. Güemes M, Rahman SA, Hussain K. What is a normal blood glucose? *Arch Dis Child* [Internet]. 2015;archdischild-2015-308336. Available from:  
<http://adc.bmjjournals.org/lookup/doi/10.1136/archdischild-2015-308336>
32. Kowalski GM, Moore SM, Hamley S, Selathurai A, Bruce CR. The Effect

- of Ingested Glucose Dose on the Suppression of Endogenous Glucose Production in Humans. *Diabetes* [Internet]. 2017 Sep;66(9):2400–6.  
Available from: <http://diabetes.diabetesjournals.org/content/66/9/2400.long>
33. Rosén LAH, Silva LOB, Andersson UK, Holm C, Östman EM, Björck IM. Endosperm and whole grain rye breads are characterized by low post-prandial insulin response and a beneficial blood glucose profile. *Nutr J* [Internet]. 2009;8(1):1–11. Available from:  
<https://nutritionj.biomedcentral.com/track/pdf/10.1186/1475-2891-8-42>
34. Parkin CG. Is Postprandial Glucose Control Important? Is It Practical In Primary Care Settings? *Clin Diabetes* [Internet]. 2002;20(2):71–6.  
Available from: <http://clinical.diabetesjournals.org/content/20/2/71.full-text.pdf>
35. Gavin N. Levinthal M, Anthony S. Tavill, MD, FRCP F. Liver Disease and Diabetes Mellitus [Internet]. 1999 [cited 2018 Aug 19]. Available from:  
<http://journal.diabetes.org/clinicaldiabetes/v17n21999/Pg73.htm>
36. Cave A, Barnardo A. Alcoholic Liver Disease. *InnovAiT Educ Inspir Gen Pract* [Internet]. 2012;5(7):393–9. Available from:  
<http://journals.sagepub.com/doi/10.1093/innovait/inr182>
37. Triplitt CL. Understanding the kidneys' role in blood glucose regulation. *Am J Manag Care*. 2012;18(1 Suppl):S11-6.
38. Nestler JE, McClanahan MA. Diabetes and adrenal disease. *Baillieres Clin Endocrinol Metab* [Internet]. 1992 Oct;6(4):829–47. Available from:  
<https://www.ncbi.nlm.nih.gov/pubmed/1445172>

39. Lwanga S.K., Lemeshow S. Sample size determination in health studies A practice manual [Internet]. World Health Organization. 1991. p. 38. Available from:  
[http://apps.who.int/iris/bitstream/handle/10665/40062/9241544058\\_%28p1-p22%29.pdf?sequence=1&isAllowed=y](http://apps.who.int/iris/bitstream/handle/10665/40062/9241544058_%28p1-p22%29.pdf?sequence=1&isAllowed=y)
40. Sastroasmoro PD dr. S, Ismael P dr. S. Dasar-dasar metodologi penelitian klinis. 5th ed. Jakarta: Sagung Seto; 2014.
41. W H O. Public health Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. 2004;363:157–63. Available from:  
[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(03\)15268-3/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(03)15268-3/fulltext)
42. Edo A, Eregie A, Adediran O, Ohwovoriole A, Ebengho S. Postprandial glucose response to selected tropical fruits in normal glucose-tolerant Nigerians. 2011;14(1):79–82. Available from:  
[http://www.njcponline.com/temp/NigerJClinPract14179-7513032\\_020513.pdf](http://www.njcponline.com/temp/NigerJClinPract14179-7513032_020513.pdf)
43. WHO. Practical guidance on capillary sampling [Internet]. 2010. Available from: <http://apps.who.int/medicinedocs/documents/s17251e/s17251e.pdf>
44. Dimeski G, Jones BW, Tilley V, Greenslade MN, Russell AW. Glucose meters: Evaluation of the new formulation measuring strips from Roche (Accu-Chek) and Abbott (MediSense). Ann Clin Biochem [Internet]. 2010;47(4):358–65. Available from:

- <http://journals.sagepub.com/doi/pdf/10.1258/acb.2010.009291>
45. World Medical Association. World Medical Association Declaration of Helsinki. Bull world Heal Organ [Internet]. 2001;79(4):373–4. Available from:  
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2566407/>&tool=pmcentrez&rendertype=abstract
46. Yusof B, Talib RRA, Karim NAN, Nisak B, Yusof M. A study of blood glucose response following temperate and tropical fruit ingestion in healthy adults. Malay J Nutr [Internet]. 2005;11(1):47–57. Available from:  
[http://nutriweb.org.my/publications/mjn0011\\_1/mjn11n1\\_art4.pdf](http://nutriweb.org.my/publications/mjn0011_1/mjn11n1_art4.pdf)
47. Ceriello A. The management of post-prandial glucose. US Endocrinol [Internet]. 2008;4(2):63–6. Available from:  
[https://www.touchendocrinology.com/sites/www.touchendocrinology.com/files/ceriello\\_1.pdf](https://www.touchendocrinology.com/sites/www.touchendocrinology.com/files/ceriello_1.pdf)
48. Esposito K, Ciotola M, Carleo D, Schisano B, Sardelli L, Di Tommaso D, et al. Post-meal glucose peaks at home associate with carotid intima-media thickness in type 2 diabetes. J Clin Endocrinol Metab [Internet]. 2008;93(4):1345–50. Available from:
49. Mashahit M, Eltokhy H, Ahmed M, Ahmed M. Effect of Prolonged Fasting ( more than Eight Hours ) on Fasting Plasma Glucose and Glycemic Control. 2015;4(3):1–12.
50. Daenen S, Bemba JM, Defer F, Elgrably F, Larger É, Slama G. Peak-time determination of post-meal glucose excursions in insulin-treated diabetic

- patients. *Diabetes Metab* [Internet]. 2018;36(2):165–9. Available from: <http://dx.doi.org/10.1016/j.diabet.2009.12.002>
51. American Diabetes Association AD. Postprandial blood glucose. American Diabetes Association. *Diabetes Care* [Internet]. 2001;24(4):775–8. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/11315848>
52. Ceriello A, Esposito K, Piconi L, Ihnat MA, Thorpe JE, Testa R, et al. Oscillating Glucose Is More deleterious to Endothelial. *Diabetes* [Internet]. 2008;57(May):1349–54. Available from: <http://diabetes.diabetesjournals.org/content/57/5/1349.full-text.pdf>
53. TS T-K. Postchallenge Plasma Glucose and Fasting Glucose or HbA 1c Level. *Diabetes Care* [Internet]. 2000;23(12):1–5. Available from: <http://care.diabetesjournals.org/content/diacare/23/12/1830.full.pdf>