

## DAFTAR PUSTAKA

1. Setiati S. Radikal bebas, antioksidan, dan proses menua. Tinjauan Pustaka. *Medika* 2003; 6:366-9
2. Werdhasari, A. Peran Antioksidan Bagi Kesehatan. *Indones. J. Biotechnol. Med.* **3**, 59–68 (2014).
3. Shihabi A, Li WG, Miller Jr FG, Weintraub NL. Antioxidant therapy for atherosclerotic vascular disease: the promise and the pitfalls. *Am J Physiol Heart Circ Physiol* [serial online]. 2002 [disitasi bulan Maret 2009]; 282(3): 797-802.
4. Siduarto, Rifai MA. *Punica granatum* L. Dalam : Verheij EWM, Coronel RE, editor. Sumber Daya Tumbuhan Asia Tenggara No. 2: Buah-buahan dan Kacang-kacangan yang dapat dimakan. Wageningen, Belanda: Pudoc, 1991;p.270-272.
5. Viuda-Martos, M., Fernandez-Lopez, J., Pérez-Alvarez, JA, 2010. Delima dan banyak komponen fungsionalnya yang terkait dengan kesehatan manusia: ulasan. Ulasan Komprehensif dalam Ilmu Pangan dan Keamanan Pangan 9, 635–654.
6. Q. Fu, L. Zhang, N. Cheng, M. Jia, Y. Zhang, Optimalisasi ekstraksi asam oleanolic dan ursolat dari bunga delima (*Punica granatum* L.), *Food Bioprod. Proses.* 92 (3) (2014) 321.
7. I. Khan, H. Rahman, NM Abd El-Salam, A. Tawab, A. Hussain, TA Khan, U. A. Khan, M. Qasim, M. Adnan, A. Azizullah, W. Murad, A. Jalal, N. Muhammad, R. Ullah, ekstrak kulit *Punica granatum*: Fraksinasi HPLC dan analisis LC MS untuk mencari senyawa yang memiliki aktivitas melawan bakteri yang resisten terhadap banyak obat, *BMC Complement. Alternatif Med.* 17 (1) (2017).
8. Elfalleh W, Tlili N, Nasri N, Yahia Y, Hannachi H, Chaira N, Ying, M., & Ferchichi,

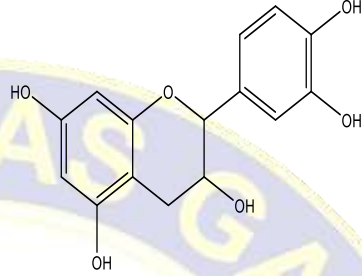
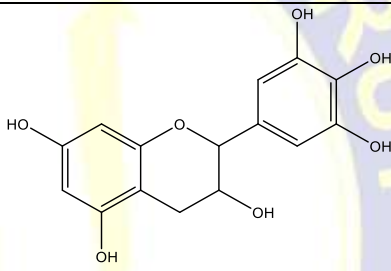
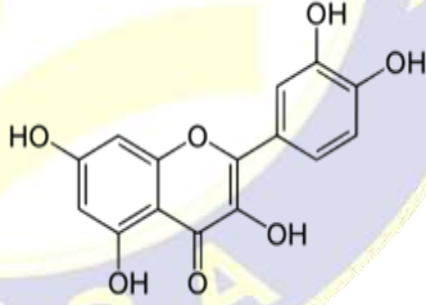
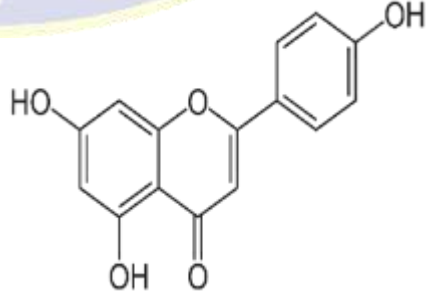
- A. (2011). Kapasitas antioksidan senyawa fenolik dan tokoferol dari buah delima Tunisia (*Punica granatum*) buah-buahan. *Jurnal ilmu pangan*, 76, C707-C713.
9. Landete J M. 2011. Ellagitanin, asam ellagic dan turunannya metabolit: Tinjauan tentang sumber, metabolisme, fungsi dan kesehatan. *Penelitian Makanan Internasional*, 44, 1150-1160.
  10. Li JK, Li GX, Zhao YH, Yu C Z. 2009. Komposisi polifenol kulit buah delima dan aktivitas antioksidannya. *Scientia Agricultura Sinica*, 42, 4035–4041.
  11. Martins S, Mercado D, Mata-Gómez M, Rodriguez L, AguileraCarbo A, Rodriguez R, Aguilar C N. 2009. Produksi mikroba dari antioksidan fenolik yang kuat melalui fermentasi keadaan padat. Dalam: Singh OV, Harvey SP, eds., *Bioteknologi Berkelanjutan*. Springer, Belanda. hal.229– 246.
  12. Seeram NP, Adams LS, Henning SM, Niu Y, Zhang Y, Nair MG, Heber D. 2005. In vitro aktivitas antiproliferasi, apoptosis dan antioksidan punicalagin, asam ellagic dan ekstrak tanin delima total ditingkatkan dalam kombinasi dengan polifenol lain seperti yang ditemukan dalam jus delima. *Jurnal Biokimia Nutrisi*, 16, 360–367.
  13. Rahmat, H Rukmana. 2003. *Delima*. Yogyakarta: Kanisius.
  14. Savitri, E.S. 2008. *Rahasia Tumbuhan Berkhasiat Obat Perspektif Islam*. Malang: UIN-Malang Perss.
  15. Sudiarto dan Rifai, M,A. (1992). *Punica granatum* L. In: Ditinjau dari Aspek Kebahasaan, Isyarat Ilmiah, dan Pemberitahuan Gaib, Bandung , PT.Mizan Pustaka.
  16. Prasetyo dan Inorih, E. 2013. *Pengelolaan Budidaya Tanaman Obat-Obatan*. Bengkulu: Badan Penerbit Fakultas Pertanian UNIB.

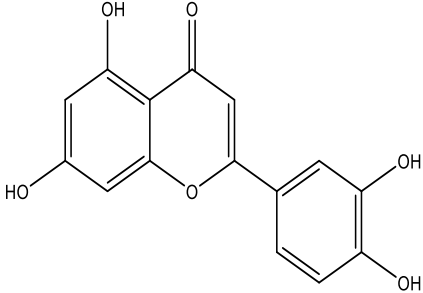
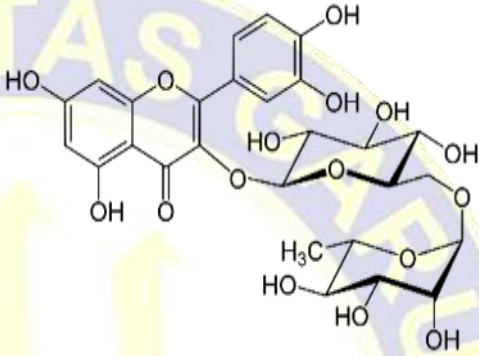
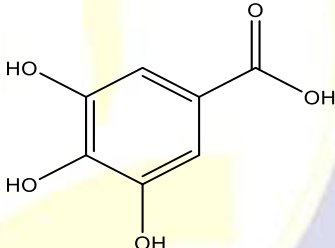
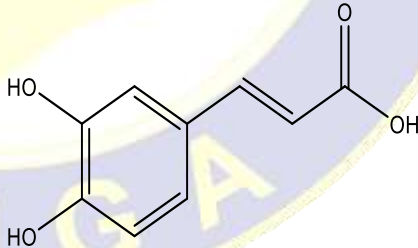
17. Bagun, Abednego., (2012). *Ensiklopedia Tanaman Obat Indonesia*. Bandung: Nasional Bappenas: Jakarta.
18. Virlando Rivan Suryadinata. Pengaruh Radikal Bebas Terhadap Proses Inflamasi Pada Penyakit Paru Obstruksi Kronis (PPOK). *Amerta Nutrition* 2018 volume 2 Issue 4 hlm 299-401.
19. Sayuti Kesuma, Yenrina Rina. *Antioksidan Alami dan Sintetik*. Andalas University Press. 2015.
20. Winarsi H, *Anrioksidan Alami dan Radikal Bebas*, (Yogyakarta: Kanisius, 2007), hlm. 19-20; 79-81.
21. Mar'atirrosydh R, Korespondensi P. Aktivitas Antioksidan Senyawa Bioaktif Umbi-umbian lokal inferior : Kajian Pustaka Antioxidantt Activity of Bioactive Compounds of Local inferior Tubers : 2015;3(2);594-601.
22. Ardiansyah, 2007. *Antioksidan dan Perannya Bagi Kesehatan*. <http://islamicspace.wordpress.com/2007/01/24/antioksidan-danperannya-bagikesehatan/> .
23. Kumalaningsih, S., 2006. *Antioksidan Alami*. Trubus Agrisarana. Surabaya.
24. Zhu,Qin Yan, Robert M. hackman, Jordi L. Ensunsa, Roberta R. Holt, and Carl L. Keen., 2002. *Antioxidative Activites of Oolong Tea*, J, Agric, Food chem. 50: 6929-6934.
25. Ionita, P., 2003. Is DPPH Stable Free Radical a Good Scavenger for Oxygen Active Species. Institute of Physical Chemistry, Romania University of York. Chemistry Department. YO10 5DD. UK.

26. Zhu, Qin Yan, Robert M. Hackman, Jodi L. Ensunsa, Roberta R. Holt, and Carl L. Keen., 2002. Antioxidative Activities of Oolong Tea. *J. Agric. Food chem.* 50 : 6929 – 6934.
27. Wiryowidagdo, S., 2007. Delima (*Punica granatum L.*) Obat Tradisional Indonesia Yang Merupakan Sumber Antioksidan. Departemen Farmasi FMIPA Universitas Indonesia.
28. Zhang, L., Gao, Y., Zhang, Y., Liu, J., Yu, J., 2010. Perubahan senyawa bioaktif dan aktivitas antioksidan pada daun delima. *Sci. Hortik.* 123, 543–546.
29. Zhang L, Fu Q, Zhang Y (2009) Komposisi antosianin dalam bunga delima dan aktivitas antioksidannya. *Kimia Makanan* 127:1444–1449.
30. Zhang L, Yang X, Zhang Y, Wang L, Zhang R (2011) In vitro sifat antioksidan dari berbagai bagian bunga delima. *Proses bio makanan* 8(9):234–240.

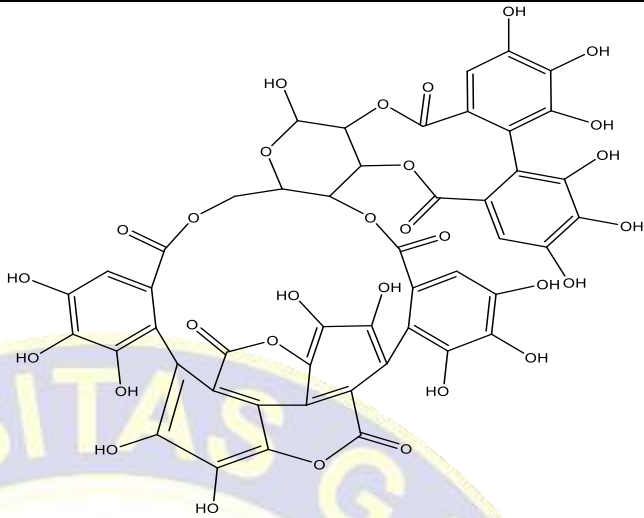
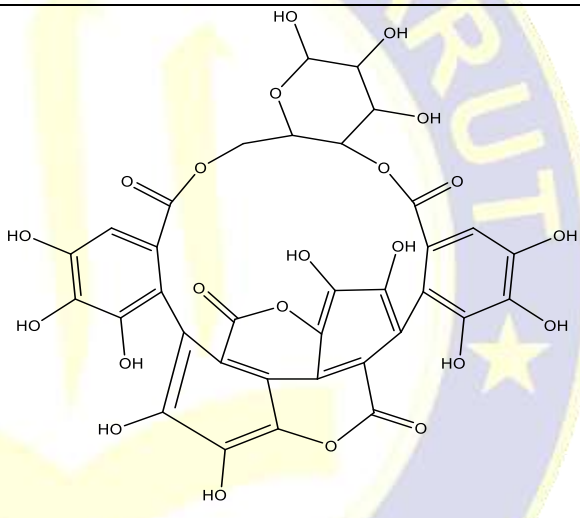
## LAMPIRAN 1

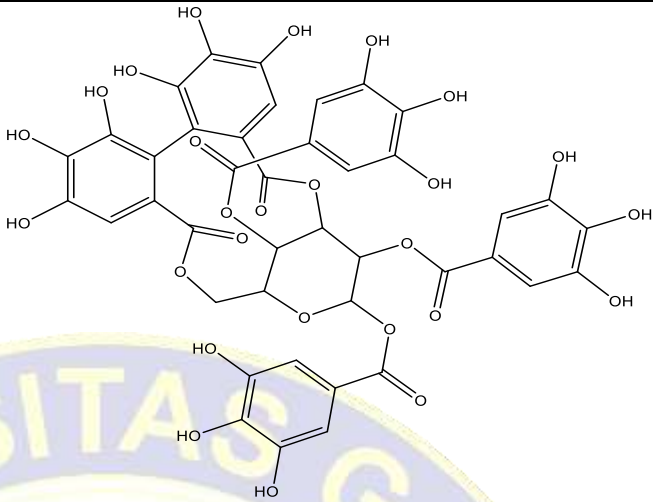
### SENYAWA KIMIA DELIMA (*Punica granatum* L)

| No | Nama senyawa     | Struktur Senyawa 2D                                                                  |
|----|------------------|--------------------------------------------------------------------------------------|
| 1  | Katekin          |    |
| 2  | Epigallocatechin |   |
| 3  | Quercetin        |  |
| 4  | Apigenin         |  |

|   |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5 | Luteolin     |  <p>Chemical structure of Luteolin, a flavone. It consists of a chromone core with a 3,4-dihydroxyphenyl group at position 7 and a 3,4-dihydroxyphenyl group at position 6.</p> <chem>Oc1cc(O)cc2c(c1)oc(=O)c3cc(O)c(O)cc32</chem>                                                                                                                             |
| 6 | Rutin        |  <p>Chemical structure of Rutin, a flavonoid. It consists of a flavone core with a 3,4,5-trihydroxyphenyl group at position 7 and a 3,4,5-trihydroxyphenyl group at position 6. The 3,4,5-trihydroxyphenyl group at position 6 is linked to a glucose molecule via an ether bond.</p> <chem>Oc1cc(O)c2c(c1)oc(=O)c3cc(O)c(O)c3O2Oc4c(O)c(O)c(O)c(O)c4O</chem> |
| 7 | Galic acid   |  <p>Chemical structure of Galic acid, a phenolic acid. It consists of a benzene ring with three hydroxyl groups at positions 3, 4, and 5, and a carboxylic acid group at position 1.</p> <chem>O=C(O)c1cc(O)c(O)c(O)c1</chem>                                                                                                                                |
| 8 | Caffeic Acid |  <p>Chemical structure of Caffeic Acid, a phenolic acid. It consists of a benzene ring with two hydroxyl groups at positions 3 and 4, and a propenoic acid group at position 1.</p> <chem>O=C(O)/C=C/c1cc(O)c(O)cc1</chem>                                                                                                                                   |



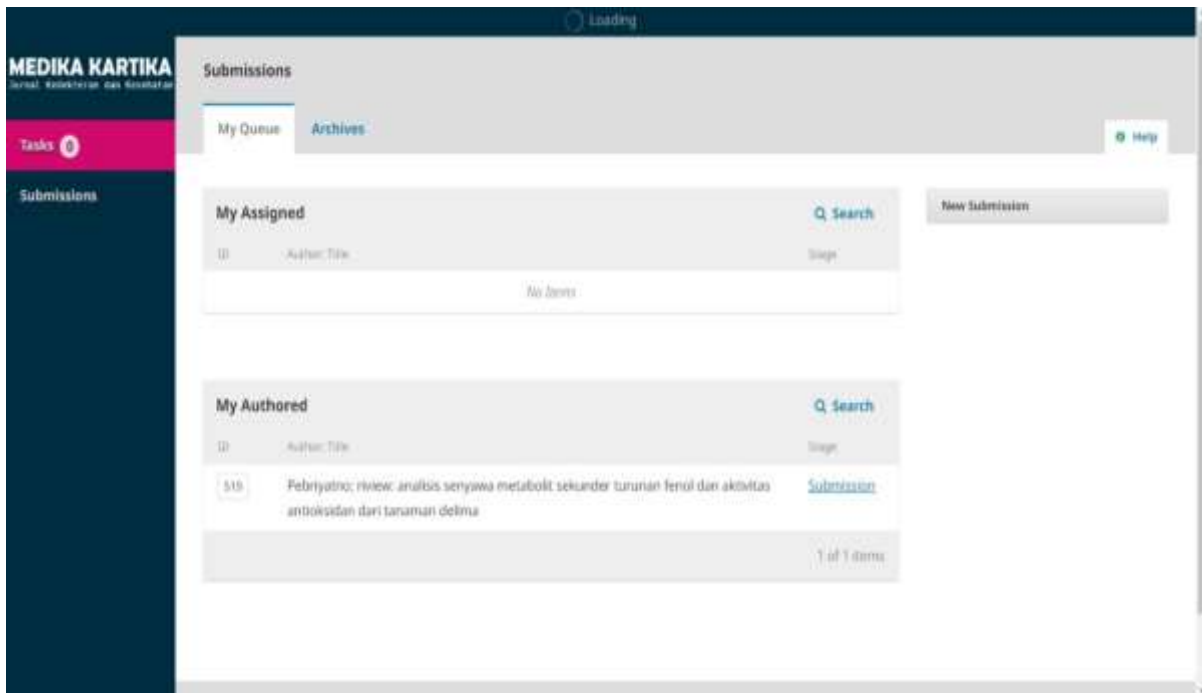
|    |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9  | Punicalagin |  <p>The chemical structure of Punicalagin is a complex polyphenolic compound. It features a central 1,4-dioxane ring system. This central ring is substituted with four gallic acid units (3,4,5-trihydroxybenzoic acid) via ester linkages. The gallic acid units are further substituted with hydroxyl groups, resulting in a highly hydrophilic molecule. The structure is shown in a perspective view, highlighting the spatial arrangement of the gallic acid units around the central dioxane ring.</p> |
| 10 | Punicalin   |  <p>The chemical structure of Punicalin is a complex polyphenolic compound. It features a central 1,4-dioxane ring system. This central ring is substituted with four gallic acid units (3,4,5-trihydroxybenzoic acid) via ester linkages. The gallic acid units are further substituted with hydroxyl groups, resulting in a highly hydrophilic molecule. The structure is shown in a perspective view, highlighting the spatial arrangement of the gallic acid units around the central dioxane ring.</p>  |

|    |             |                                                                                    |
|----|-------------|------------------------------------------------------------------------------------|
| 11 | Punikafolin |  |
|----|-------------|------------------------------------------------------------------------------------|



## LAMPIRAN 2

### BUKTI SUBMIT



## DAFTAR RIWAYAT HIDUP

### 1. IDENTITAS DIRI

Nama : Ricko Pebriyatno  
 Tempat, Tanggal Lahir : Subang, 15 Februari 2000  
 Jenis Kelamin : Laki-Laki  
 Agama : Islam  
 Kewarganegaraan : Indonesia  
 Status : Mahasiswa  
 Alamat : Kp. Majasari RT/RW 10/03 desa Majasari Kec. Cibogo Kab. Subang  
 Telepon : 082180013597  
 Email : [rickofebriyatno@gmail.com](mailto:rickofebriyatno@gmail.com)

### 2. RIWAYAT PENDIDIKAN

| Jenjang Pendidikan | Nama Sekolah/Universitas  | Tahun Masuk | Tahun Keluar |
|--------------------|---------------------------|-------------|--------------|
| SD/MI              | SD Majasari               | 2006        | 2012         |
| SMP/MTs            | SMPN 1 Cibogo             | 2012        | 2015         |
| SMA/MA/SMK         | SMK Bhakti Kencana Subang | 2015        | 2018         |
| Perguruan Tinggi   | Universitas Garut         | 2018        | 2022         |