DAFTAR PUSTAKA

Adhani, R., Husaini, 2017. Logam Berat Sekitar Manusia. Lambung Mangkurat University Press, Banjarmasin.

Ale, M.T., Mikkelsen, J.D., Meyer, A.S., 2011. Important determinants for fucoidan bioactivity: A critical review of structure-function relations and extraction methods for fucose-containing sulfated polysaccharides from brown seaweeds. Mar. Drugs 9, 2106–2130.

Anggadiredja, J.T., Zatnika, A., Purwoto, H., Istini, S., 2011. Rumput Laut, Penebar Swadaya. Penebar Swadaya, Jakarta.

Basmal, J., Utomo, B.S.B., Tazwir, 2013. Membuat Alginat dari Rumput Laut Sargassum, Penebar Swadaya. Penebar Swadaya, Jakarta.

Brunton, L.L., Hilal-Dandan, R., Knollmann, B.C., 2018. Goodman & Gilman's: The Pharmacological Basis of Therapeutics, Thirteenth Edition, 13th ed, Goodman & Gilman's: The Pharmacological Basis of Therapeutics, Thirteenth Edition. McGraw-Hill Education, New York.

Chan, M. V., Armstrong, P.C., Warner, T.D., 2018. 96-Well Plate-Based Aggregometry. Platelets 29, 650–655.

Dobrinčić, A., Balbino, S., Zorić, Z., Pedisić, S., Kovačević, D.B., Garofulić, I.E., Dragović-Uzelac, V., 2020. Advanced technologies for the extraction of marine brown algal polysaccharides. Mar. Drugs 18.

Harrison, P., Lordkipanidzé, M., 2013. Testing platelet function. Hematol. Oncol. Clin. North Am. 27, 411–441.

Inayah, P.W., 2015. UJI AKTIVITAS ANTIPLATELET, ANTIKOAGULAN, DAN TROMBOLISIS EKSTRAK ETANOL DAUN BELIMBING WULUH (Avverhoa bilimbi L.) IN VITRO. Universitas Jember.

Kartiningsih, Rahmat, D., Simanjuntak, P., Abdillah, S., 2019. Platelet anti-aggregation activity of hydrolized and irradiated crude fucoidan from Brown Seaweed (Sargassum polycystum). J. Biol. Ser. 2, 82–85.

Kasim, M., 2016. Makro Alga. In: Ainurrohmah, F. (Ed.), Makro Alga. Penebar Swadaya, Jakarta.

Katzung, B.G., 2018. Basic & Clinical Pharmacology, Fourteenth Edition. In: Basic and Clinical Pharmacology. McGraw-Hill Education, New York, pp. 1497–1509.

Lavie, C.J., Howden, C.W., Scheiman, J., Tursi, J., 2017. Upper Gastrointestinal Toxicity Associated With Long-Term Aspirin Therapy: Consequences and Prevention. Curr. Probl. Cardiol. 42, 146–164.

Layne, K., Passacquale, G., Ferro, A., 2018. The role of platelets in the pathophysiology of atherosclerosis and its complications, Cardiovascular Thrombus: From Pathology and Clinical Presentations to Imaging, Pharmacotherapy and Interventions. Elsevier Inc.

Lim, S.J., Wan Aida, W.M., 2017. Extraction of Sulfated Polysaccharides (Fucoidan) From Brown Seaweed, Seaweed Polysaccharides: Isolation, Biological and Biomedical Applications. Elsevier Inc.

Lim, S.J., Wan Aida, W.M., Maskat, M.Y., Latip, J., Badri, K.H., Hassan, O., Yamin, B.M., 2016. Characterisation of fucoidan extracted from Malaysian Sargassum binderi. Food Chem. 209, 267–273.

Majithia, A., Bhatt, D.L., 2019. Novel Antiplatelet Therapies for Atherothrombotic Diseases. Arterioscler. Thromb. Vasc. Biol. 39, 546–557.

Marianti A. Manggau, Stephanie, Syaharuddin Kasim, Ismail , Asmi Citra Malina and Wira Bahari Nurdin, 2019. Antiplatelet Activity of Brown Seaweed Sargassum ilicifolium Lyophilized Fraction containing flavonoid and fucoidan, Proceeding of Indonesia Seaweed Forum.

Moriyama, H., Hosoe, T., Wakana, D., Itabashi, T., Kawai, K.I., Iizuka, T., Hoshi, K., Fukushima, K., Lau, F.C., 2009. Assay-guided informatory screening method for antiplatelet effect of adenosine isolated from Malbranchea filamentosa IFM 41300: Inhibitory behaviors of adenosine in different solvents. J. Heal. Sci. 55, 103–108.

Murray, R.K., Granner, D.K., Rodwell, V.W., 2012. Biokimia Harper, Edisi 27. ed, Buku Kedokteran EGC. Buku Kedokteran EGC, Jakarta.

Oktarina, E., 2017. Alga: Potensinya pada Kosmetik dan Biomekanismenya. Maj. Teknol. Agro Ind. 9, 1–10.

Organization, W.H., 2016. Technical package for cardiovascular disease management in primary health care, Report. World Health Organization, Geneva, Switzerland.

Organization, W.H., n.d. Cardiovascular Disease [WWW Document]. URL https://www.who.int/health-topics/cardiovascular-diseases/#tab=tab_1

Palta, S., Saroa, R., Palta, A., 2014. Overview of the coagulation system.

Indian J. Anaesth. 58, 515–523.

Paniccia, R., Priora, R., Liotta, A.A., Abbate, R., 2015. Platelet Function tests: A Comparative Review. Vasc. Health Risk Manag. 11, 133–148.

Paper, R., Rad, R., Paper, R., Rad, R., Paper, R., 2017. Revijalni Rad Review Paper Revijalni Rad Review Paper Update of Antiplatelet Therapy in Patients Without 19, 1–6.

Periayah, M.H., Halim, A.S., Saad, A.Z.M., 2017. Mechanism action of platelets and crucial blood coagulation pathways in Hemostasis. Int. J. Hematol. Stem Cell Res. 11, 319–327.

Sherwood, L., 2014. Fisiologi Manusia Dari Sel ke Sistem, Edisi 8. ed, EGC. EGC, Jakarta.

Sinurat, E., Kusumawati, R., 2017. Optimasi Metode Ekstraksi Fukoidan dari Rumput Laut Cokelat Sargassum binderi Sonder. J. Pascapanen dan Bioteknol. Kelaut. dan Perikan. 12, 125–134. https://doi.org/10.15578/jpbkp.v12i2.388

Sloane, E., 2004. Anatomi dan Fisiologi Untuk Pemula, Anatomi dan Fisiologi Untuk Pemula. Penerbit Buku Kedokteran EGC, Jakarta.

Svehlah, G., 1979. VOGEL'S TEXTBOOK OF MACRO AND SEMIMICRO QUALITATIVE INORGANIC ANALYSIS, Fifth Edit. ed. Longman Group Limited, New York. https://doi.org/10.1016/0165-9936(88)90029-5

Themistocleous, I., Stefanakis, M., Douda, H.T., 2017. Coronary Heart Disease Part I : Pathophysiology and Risk Factors. J. Phys. Act. Nutr. Rehabil. 167–175.

Tsujino, T., Isobe, K., Kawabata, H., Aizawa, H., Yamaguchi, S., Kitamura, Y., Masuki, H., Watanabe, T., Okudera, H., Nakata, K., Kawase, T., 2019. Spectrophotometric determination of the aggregation activity of platelets in platelet-rich plasma for better quality control. Dent. J. 7.

Ullah, S., Khalil, A.A., Shaukat, F., Song, Y., 2019. Sources, extraction and biomedical properties of polysaccharides. Foods 8, 1–23.

Wang, Y., Xing, M., Cao, Q., Ji, A., Liang, H., Song, S., 2019. Biological activities of fucoidan and the factors mediating its therapeutic effects: A review of recent studies. Mar. Drugs 17, 15–17.

Wells, B.G., DiPiro, J.T., Schwinghammer, T.L., DiPiro, C. V., 2017.

Pharmacotherapy Handbook Tenth Edition. McGraw-Hill Education, New York.

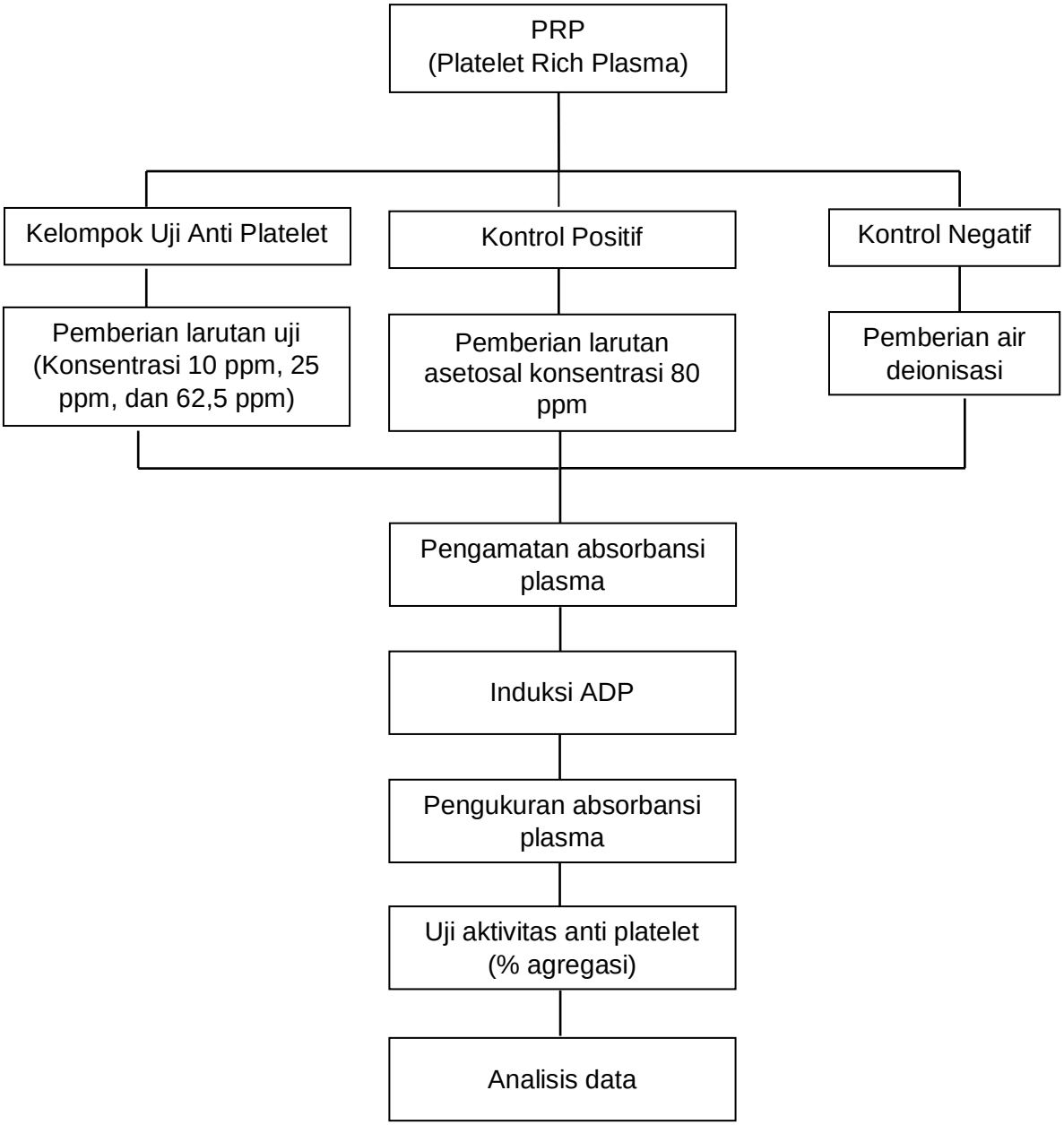
Younis, L.S., Mohammed, I.M., Najah, H.T., Haider, A.M., 2020. GSC Biological and Pharmaceutical Sciences Antiplatelet drugs overview 10, 81–89.

Zhao, X., Dong, S., Wang, J., Li, F., Chen, A., Li, B., 2012. A comparative study of antithrombotic and antiplatelet activities of different fucoidans from Laminaria japonica. Thromb. Res. 129, 771–778.

LAMPIRAN

Lampiran 1

Skema Uji Aktivitas Antiplatelet



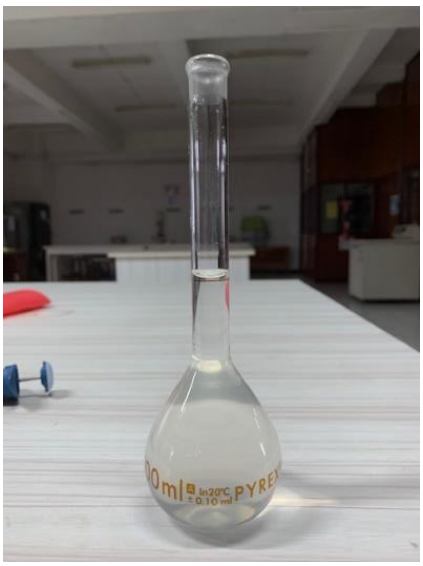
Lampiran 2

Dokumentasi Penelitian

Gambar 7. Penimbangan Isolat Polisakarida Sulfat

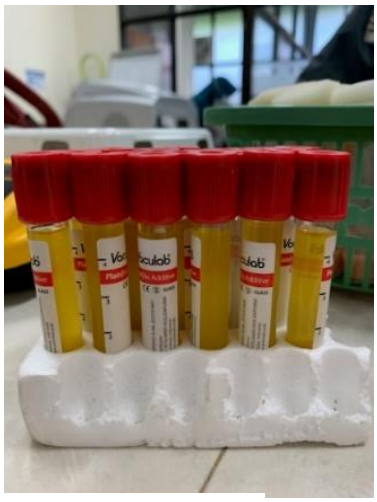
Gambar 8. Pr

Gambar 9. Proses Pengenceran Isolat Polisakarida Sulfat



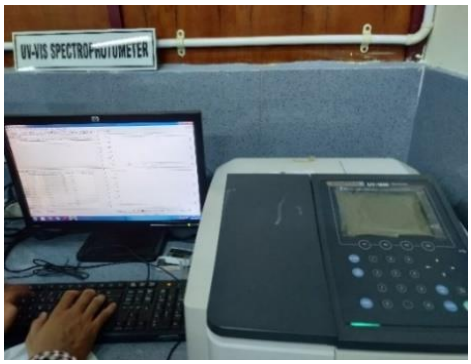
Gambar 10. Pemb Aseto

Gambar 11. Pembuatan Larutan ADP



Gambar 12. *Platel* (PRF

Gambar 13. Proses Pengadukan Menggunakan *Thermomixer*



Gambar 14. Pengukuran Absorbansi Plasma Menggunakan Spektrofotometer UV-VIS

Lampiran 3

Perhitungan % Agregasi Platelet dan % Inhibisi Agregasi Platelet

1. % Agregasi Platelet

   a. Kontrol Positif (Larutan Asetosal 80 ppm)

   Replikasi 1 : $\frac{1 - B}{A}$ x 100 % = $\frac{1 - 0,907}{0,959}$ x 100 %= 9,69 %

   Replikasi 2 : $\frac{1 - B}{A}$ x 100 % = $\frac{1 - 0,904}{0,954}$ x 100 %= 10,06 %

   Replikasi 3 : $\frac{1 - B}{A}$ x 100 % = $\frac{1 - 0,884}{0,959}$ x 100 %= 12,09 %

   X□ % Agregasi Kontrol Positif = 10,60 %

   b. Kontrol Negatif (Air Deionisasi)

   Replikasi 1 : $\frac{1 - B}{A}$ x 100 % = $\frac{1 - 0,493}{0,997}$ x 100 %= 50,85 %

   Replikasi 2 : $\frac{1 - B}{A}$ x 100 % = $\frac{1 - 0,369}{0,99}$ x 100 %= 63,73 %

   Replikasi 3 : $\frac{1 - B}{A}$ x 100 % = $\frac{1 - 0,351}{0,996}$ x 100 %= 65,16 %

   X□ % Agregasi Kontrol Negatif = 59,91 %

   c. Isolat Polisakarida Sulfat 10 ppm

   Replikasi 1 : $\frac{1 - B}{A}$ x 100 % = $\frac{1 - 0,862}{0,836}$ x 100 % = 16,5 %

   Replikasi 2 : $\frac{1 - B}{A}$ x 100 % = $\frac{1 - 0,869}{0,775}$ x 100 % = 16,9 %

   Replikasi 3 : $\frac{1 - B}{A}$ x 100 % = $\frac{1 - 0,844}{0,811}$ x 100 % = 19,23 %

   X□ % Agregasi Isolat Polisakarida Sulfat 10 ppm = 17,54 %

   d. Isolat Polisakarida Sulfat 25 ppm

   Replikasi 1 : $\frac{1 - B}{A}$ x 100 % = $\frac{1 - 0,878}{0,826}$ x 100 % = 14,76 %

   Replikasi 2 : $\frac{1 - B}{A}$ x 100 % = $\frac{1 - 0,874}{0,828}$ x 100 % = 15,21 %

Replikasi 3 : $\frac{1 - B}{A}$ x 100 % = $\frac{1 - 0,872}{0,836}$ x 100 % = 15,31 %

X□ % Agregasi Isolat Polisakarida Sulfat 25 ppm = 15,16 %

e. Isolat Polisakarida Sulfat 62,5 ppm

Replikasi 1 : $\frac{1 - B}{A}$ x 100 % = $\frac{1 - 0,88}{0,88}$ x 100 % = 13,63 %

Replikasi 2 : $\frac{1 - B}{A}$ x 100 % = $\frac{1 - 0,879}{0,885}$ x 100 % = 13,67 %

Replikasi 3 : $\frac{1 - B}{A}$ x 100 % = $\frac{1 - 0,876}{0,868}$ x 100 % = 14,28 %

X□ % Agregasi Isolat Polisakarida Sulfat 62,5 ppm = 13,86 %

2. % Inhibisi Agregasi Platelet

$$\% \text{ Inhibisi} = \frac{\% \text{ Agregasi Kontrol Negatif} - \% \text{ Agrerasi Platelet}}{\% \text{ Agregasi Kontrol Negatif}} \text{ x } 100 \%$$

a. Kontrol Positif (Larutan Asetosal 80 ppm)

$$\% \text{ Inhibisi} : \frac{59,91 \% - 10,60 \%}{59,91 \%} \text{ x } 100 \% = 82,30 \%$$

b. Isolat Polisakarida Sulfat 10 ppm

$$\% \text{ Inhibisi} : \frac{59,91 \% - 17,54 \%}{59,91 \%} \text{ x } 100 \% = 70,72 \%$$

c. Isolat Polisakarida Sulfat 25 ppm

$$\% \text{ Inhibisi} : \frac{59,91 \% - 15,16 \%}{59,91 \%} \text{ x } 100 \% = 74,69 \%$$

d. Isolat Polisakarida Sulfat 62,5 ppm

$$\% \text{ Inhibisi} : \frac{59,91 \% - 13,86 \%}{59,91 \%} \text{ x } 100 \% = 76,86 \%$$

Lampiran 4

Data Hasil Analisis Statistik

Tabel 2. Hasil Uji Pendistribusian Data

Tests of Normality

	Perlakuan	Kolmogorov-Smirnov[a]			Shapiro-Wilk	
		Statistic	df	Sig.	Statistic	df
PersenAgregasi	Aspirin 80 ppm	.330	3	.	.867	3
	Air Deionisasi	.353	3	.	.824	3
	Ekstrak 10 ppm	.335	3	.	.857	3
	Ekstrak 25 ppm	.272	3	.	.947	3
	Ekstrak 62.5 ppm	.366	3	.	.796	3

Tabel 3. Hasil Uji One-Way-Anova

Descriptives

PersenAgregasi

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean
					Lower Bound
Aspirin 80 ppm	3	10.6067	1.29932	.75016	7.3790
Air Deionisasi	3	59.9133	7.88158	4.55043	40.3344
Ekstrak 10 ppm	3	17.5433	1.47432	.85120	13.8809
Ekstrak 25 ppm	3	15.1633	.17474	.10088	14.7293
Ekstrak 62.5 ppm	3	13.8600	.36428	.21032	12.9551
Total	15	23.4173	19.27698	4.97729	12.7421

ANOVA

PersenAgregasi

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5070.139	4	1267.535	95.816	.000
Within Groups	132.289	10	13.229		
Total	5202.427	14			

Tabel 4. Hasil Uji Post Hoc Tukey

Multiple Comparisons

Dependent Variable: PersenAgregasi
Tukey HSD

(I) Perlakuan	(J) Perlakuan	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval
					Lower Bound
Aspirin 80 ppm	Air Deionisasi	-49.30667*	2.96972	.000	-59.0803
	Ekstrak 10 ppm	-6.93667	2.96972	.211	-16.7103
	Ekstrak 25 ppm	-4.55667	2.96972	.565	-14.3303
	Ekstrak 62.5 ppm	-3.25333	2.96972	.805	-13.0269
Air Deionisasi	Aspirin 80 ppm	49.30667*	2.96972	.000	39.5331
	Ekstrak 10 ppm	42.37000*	2.96972	.000	32.5964
	Ekstrak 25 ppm	44.75000*	2.96972	.000	34.9764
	Ekstrak 62.5 ppm	46.05333*	2.96972	.000	36.2797
Ekstrak 10 ppm	Aspirin 80 ppm	6.93667	2.96972	.211	-2.8369
	Air Deionisasi	-42.37000*	2.96972	.000	-52.1436
	Ekstrak 25 ppm	2.38000	2.96972	.924	-7.3936
	Ekstrak 62.5 ppm	3.68333	2.96972	.730	-6.0903
Ekstrak 25 ppm	Aspirin 80 ppm	4.55667	2.96972	.565	-5.2169
	Air Deionisasi	-44.75000*	2.96972	.000	-54.5236
	Ekstrak 10 ppm	-2.38000	2.96972	.924	-12.1536
	Ekstrak 62.5 ppm	1.30333	2.96972	.991	-8.4703
Ekstrak 62.5 ppm	Aspirin 80 ppm	3.25333	2.96972	.805	-6.5203
	Air Deionisasi	-46.05333*	2.96972	.000	-55.8269
	Ekstrak 10 ppm	-3.68333	2.96972	.730	-13.4569
	Ekstrak 25 ppm	-1.30333	2.96972	.991	-11.0769

Lampiran 5

Surat Permohonan Pembelian Darah

KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN
UNIVERSITAS HASANUDDIN
FAKULTAS FARMASI
Jalan.Perintis kemerdekaan Km.10, Makassar 90245
Telepon (0411) 588556, Faksimili (0411) 590663
Laman: farmasi.unhas.ac.i

Nomor : 039/UN4.17.1/KP.06.07/2021 05 Januari 2021
Perihal : Permohonan Pembelian Darah

Yth. Kepala Unit Transfusi Darah PMI
Kota Makassar
di
Makassar

Dengan hormat, sehubungan dengan pelaksanaan penelitian mahasiswa Fakultas Farmasi Unhas yang dilakukan oleh :

Nama Mahasiswa : Amelia Horas
Nomor Pokok : N011171303
Program Studi : S1 Farmasi

Dengan ini kami mengajukan permohonan agar mahasiswa tersebut dapat diizinkan untuk melakukan pembelian darah di UPT PMI Kota Makassar.

Demikian permohonan kami, atas perhatian dan kerjasamanya disampaikan terima kasih.

An. Dekan,
Wakil Dekan Bid.Akademik, Riset dan Inovasi,

Prof.Dr.rer-nat.Marianti A. Manggau, Apt.
NIP. 196703191992032002

Tembusan :
1. Ketua Gugus Penjaminan Mutu
2. Kabag. Tata Usaha
3. Arsip