

BAB V

KESIMPULAN DAN SARAN

A. Kesimpulan

Pertama, bakteri *Klebsiella sp.* ditemukan 26 dari ke- 40 sampel isolat sampel sputum pasien pneumonia di RSUD Dr. Moewardi surakarta.

Kedua, hasil uji pola sensitivitas *Klebsiella sp.* dari sputum pasien pneumonia di RSUD Dr. Moewardi terhadap antibiotik siprofloksasin sensitif 88,89% intermediate 11,11% azitromisin sensitif 29,63%, resisten 70,37% imipenem sensitif 74,07 %, intermediate 7,41 %, resisten 18,52% gentamisin sensitif 48,15%, intermediate 51,85%.

Ketiga, yang memiliki efek paling sensitif terhadap *Klebsiella sp.* adalah antibiotik siprofloksasin.

B. Saran

Pertama, perlu dilakukan penelitian lebih lanjut terhadap bakteri patogen lain penyebab pneumonia.

Kedua, perlu dilakukan pemilihan antibiotik sesuai dengan *guide line* terapi ataupun sesuai dengan formularium di rumah sakit yang dituju.

Ketiga, disarankan dapat menggunakan metode identifikasi secara molekuler untuk mengidentifikasi bakteri *Klebsiella sp.* dan pengerjaan harus aseptis.

Keempat, perlu diperhatikan dalam pemberian antibiotik yang disesuaikan dengan penyebab ataupun infeksi sehingga tepat sasaran, mengurangi efek yang tidak diinginkan, dan mengurangi angka resistensi terhadap antibiotik.

DAFTAR PUSTAKA

- Ahmadi F, Abolghasemi S, Parhizgari N, Moradpour F. 2013. Effect of silver nanoparticles on common bacteria in hospital surfaces. *Jundishapur J Microbiol.* 6 (3): 209- 214.
- Alfarizi, ME. 2017. *Pola Mikroorganisme Penyebab Pneumonia Dan Sensitivitasnya Terhadap Antibiotik Di Masyarakat Bandar Lampung* [Skripsi]. Bandar Lampung: Fakultas Kedokteran, Universitas Lampung.
- Aly SA, Tawfeek RA, Mohammed IS. 2016. Bacterial catheter- associated urinary tract infection in the intensive care unit of Assiute University Hospital. *Al Azhar Assiut Medical Journal.* 14 (2): 52- 58.
- [BDC] Becton, Dickinson and Company. 2015. *BBL™ Mac Conkey II Agar : Quality Control Prosedures (Optional)*. <http://www.bd.com/en-us/support/diagnostic-system-qcpi-manuals> [30 April 2018].
- [BDC] Becton, Dickinson and Company. 2014. *BBL™ Mac Conkey II Agar : Quality Control Prosedures (Optional)*. <http://www.bd.com/en-us/support/diagnostic-system-qcpi-manuals> [30 April 2018].
- Biswas R, Rabbani R, Ahmed HS, Sarker MAS, Nahida Z, Rahman MM. 2014. Antibiotics sensitivity pattern of urinary tract infection at a tertiary care hospital. *Bangladesh crit care J.* 2 (1): 21- 24.
- Brad GF, Sabau I, Boia M, Marcovici T, Cracium A dkk. 2011. Trends and bacterial pathogens of lower respiratory tract infection in children. *Timisoara Medical Journal,* 61 (3- 4): hlm: 193- 198.
- Brisse S, Grimont F. 2006. *The Genus Klebsiella Taxonomic History and Structure*.p. 159- 169.
- Clinical and Laboratory Standards Institute (CLSI). Performance Standards for Antimicrobial Susceptibility Testing.* 27th ed. CLSI supplement M100. 950 West Valley Road, Suite 2500, Wayne, Pennsylvania 19087 USA, 2017. Clinical and Laboratory Standards Institute.

- Cunha A Burke, MD dkk. 2013. Community Acquired Pneumonia. Diakses 9 September 2017, Dari <http://emedicine.medscape.com/article/234240-overview#a1>
- Cascini S AN, Incalzi RA, Pinnarelli L, Mayer F, Arca M, Fusco D, Davoli M. 2013. Pneumonia burden in elderly patient: a classification algorithm using administrative data. *BMC Infectious Disease*. 13 (559).
- Dahlan Z. 2014. *Pneumonia. Buku Ajar Ilmu Penyakit Dalam*. Vol 2. 6 ed. In: W.Sudoyo A, Setiyohadi B, Alwi I, K. MS, Setiati S, editors. Jakarta: Pusat Penerbitan Departemen Ilmu Penyakit Dalam Fakultas Kedokteran Universitas Indonesia.
- Depkes, 2005, *Pharmaceutical Care Untuk Penyakit Saluran Pernafasan*, Departemen Kesehatan Republik Indonesia.
- Dwijoseputro D. 1984. *Dasar-Dasar Mikrobiologi*. Jakarta Pusat: Djambatan
- Fauci, Braunwald, Kasper et al. 2012. Harrison : *Manual Kedokteran. Jilid 2*. Tangerang
- FKUI, 2005. Media of microorganism. [http://www. Biology.clc.uc.edu](http://www.Biology.clc.uc.edu) 3 maret 2005, 15.00 WIB.
- FKUI, 2007. *Farmakologi dan Terapi*. Edisi V. Jakarta: Departemen Farmakologi dan Terapeutik Fakultas Kedokteran Universitas Indonesia. Hal 587-588, 714, 719.
- Goodman and Gilman. 2008. *Manual Farmakologi dan Terapi*. Jakarta: Penerbit Buku Kedokteran EGC.
- Goodman & Gilman. 2010. *Manual of Pharmacology and Therapeutics*. Jakarta: Penerbit Buku Kedokteran EGC
- Goodman & Gilman. 2011. *Dasar Farmakologi Terapi volume 2*. Jakarta: Penerbit Buku Kedokteran EGC.
- Gruendemann, B.J., dan Fernsebner, B. 2006. *Buku Ajar Keperawatan Perioperatif*. Jakarta: Kedokteran EGC.
- Harti AS. 2015. *Mikrobiologi Kesehatan*. Peran Mikrobiologi Dalam Bidang Kesehatan. Surakarta: Penerbit Andi. hlm 119- 128.

- Harmita, Radji M. 2005. *Buku Ajar Analisis Hayati*. Jakarta: Departemen Farmasi FMIPA Universitas Indonesia.
- Ima Fatimah, Kistrini, D. Andang arif wibawa. 2015. Uji kepekaan bakteri *klebsiella sp.* Hasil isolasi ulkus diabetes pasien rawat inap di RSUD Dr. Moewardi terhadap antibiotik meropenem, gentamisin, seftriakson, siprofloksasin, pada bulan februari- maret tahun 2014. *Jurnal Farmasi Indonesia*. Vol. 12 No.1 hal 33-40.
- Jawetz E, Melnick J, Adelberg E. 2013. *Medical Mikrobiology*. Vol.25. Jakarta: Widya Medika..
- Kardana, MI. 2011. Pola Kuman dan Sensitifitas Antibiotik di Ruang Perinatologi. *Sari Perdiatri* 12(6): 381- 385.
- Kusuma D.A. 2013. *Perbedaan Pola Kepekaan Terhadap Antibiotik Pada Klebsiella sp. Yang Mengkolonisasi Nasofaring Balita* [Karya Tulis Ilmiah]. Semarang: Universitas Diponegoro.
- Ludden C, Cormican M, Vellinga A, Johnson JR, Austin B, Morris D. 2015. Colonosation with ESBL- producing and carbapenemase- producing *Enterobacteriaceae*, vancomisyn- resistant enterococci, and meticillin- resistant *Staphylococcus aureus* in a long term- care fasility over one year. *BMC infect Dis*.5: 86.
- Mansjoer. 2014. *Kapita Seleкта Kedokteran*. Jakarta : Media Aesculapius.
- Mycek J. M., dkk. 2001. *Farmakologi Ulasan Bergambar*. Jakarta: Widya Madika.
- Nurmala, IGN Virgiandhy, Andriani, Delima F. Liana. 2013. *Resistensi dan Sensitivitas Bakteri terhadap Antibiotik di RSUD dr. Soedarso Pontianak Tahun 2011-2013*. Vol. 3 No. 1, April 2015.
- Patty RF, Fatimawali, Wewengkang DS.2016. *Identifikasi Dan Uji Sensitifitas Bakteri Yang Diisolasi Dari Sputum Penderita Pneumonia Di RSUP Prof. Dr. R. D. Kandou-Manado Terhadap Antibiotik Ampisillin, Cefixime Dan Siprofloksasin*. PHARMACON 5:125-134
- Pleazar. 2006. *Dasar- Dasar Mikrobiologi*. Jakarta: UI Press.

- Power DA, Mc Cuen PJ. 1988. *Manual of BBL Products and Laboratory Procedures*. Sixth edition. Maryland: Becton Dickinson. hlm 95, 119,138.
- Pratiwi S. 2008. *Mikrobiologi Farmasi*. Jakarta: Penerbit Airlangga. hlm. 188-189.
- Prayoga E. 2013. Perbandingan Efek Ekstrak Daun Sirih Hijau (*Piper betle L.*) Dengan Metode Difusi Disk dan Sumuran Terhadap Pertumbuhan Bakteri *Staphylococcus aureus*.
- Said Mardjanis. 2008. *Respirologi Anak. Edisi I*, Jakarta : Badan Penerbit IDAI.
- Setiabudy R. 2007. *Pengantar Antimikroba*. Di dalam: Gunawan SG, Setiabudy R, Nafrialdi, Elysabeth, editor. *Farmakologi dan Terapi*. Edisi 5. Jakarta: Balai Penerbit FKUI.
- Siswandono dan Soekardjo B. 2000. *Kimia Medisinal*. Jilid II. Jakarta: Airlangga University Press.
- Sudoyo, Aru W, dkk. 2007. *Buku Ajar Ilmu penyakit Dalam*. Edisi 4, Jilid 1. Jakarta : Departemen Ilmu Penyakit Dalam FKUI.
- Sugoro I. 2004. *Pengontrolan penyakit masitis dan manajemen pemerahan susu*. Artikel Patir Batan. 2: 20-22.
- Sulistiyowati, M. P. 2017. Identifikasi Dan Uji Resistensi Bakteri *Klebsiella Pneumonia*, *Streptococcus Pneumonia*, *Staphylococcus Aureus* Yang Diisolasi Dari Sputum Pasien Penderita Bronkhitis Terhadap Antibiotik Sefiksim, Siprofloksasin, Azitromisin, Di RSUD Prof. Dr. Margono Soekarjo. Universitas Muhammadiyah Purwokerto.
- Superti SV, Augusti G, Zavascki AP. 2009. Risk factors for and mortality of extended- spectrum β lactamase produsing *klebsiella pneumonia* and *Eschericia coli* nosocomial bloodstream infection. *Rev Inst Med Trop Sao Paulo*. 51. (4): 211- 216.
- Tessy A., Ardaya, Suwanto. 2001. Infeksi Saluran Kemih. Dalam Buku Ajar Ilmu Penyakit Dalam, edisi ketiga jilid II, edit. Suyono, S. Jakarata: Balai Penerbit FKUI, 369- 376.
- Tjay, Tan Hoan dan Rahardja, Kirana. 2002. *Obat- obat penting*. Jakarta: Gramedia, (Hal 58; 63-68; 75- 77; 134).

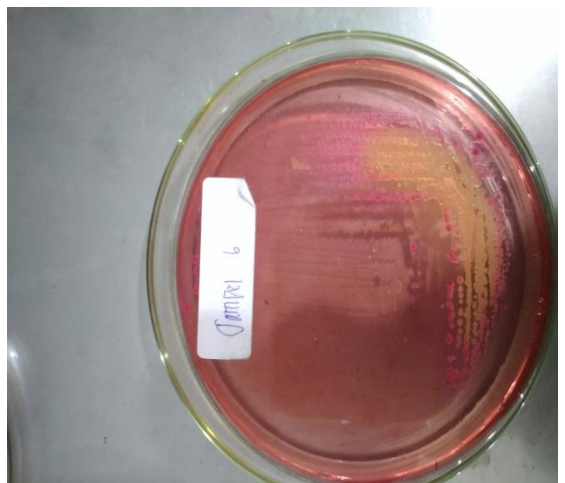
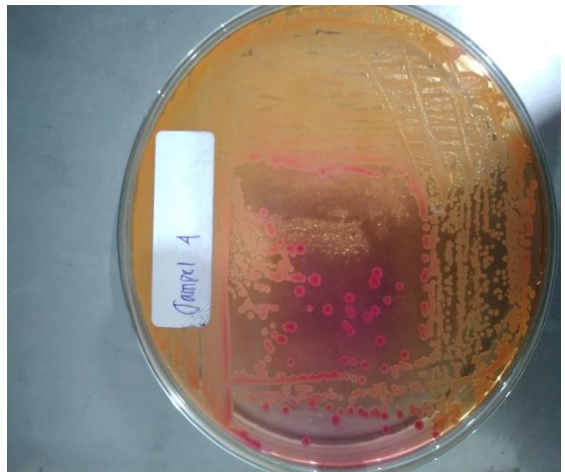
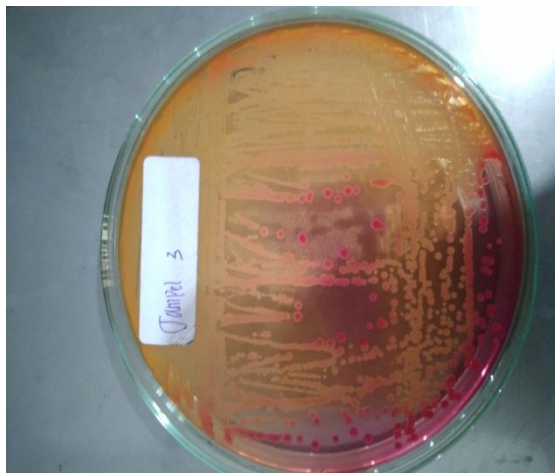
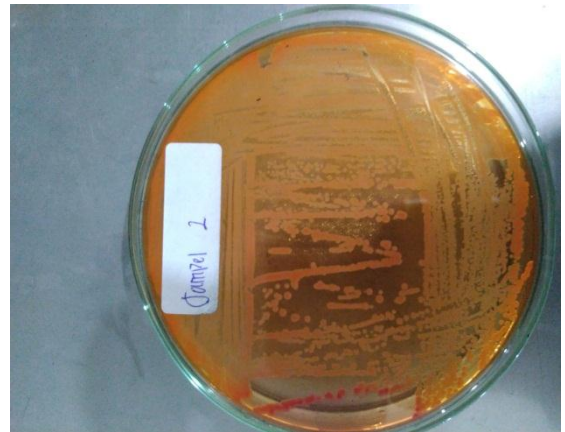
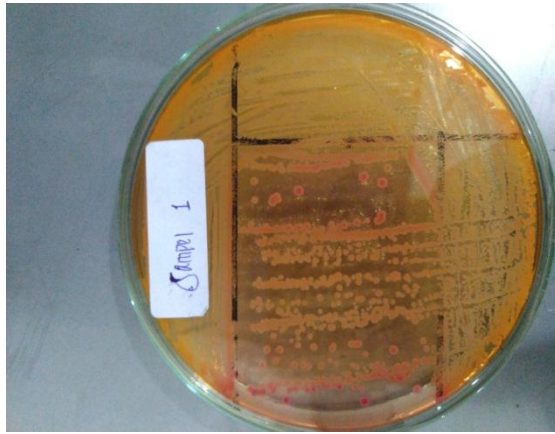
- Tuon FF, Kruger M, Terreri M, Pentealdo-Filho SR, Gortz I. 2011. *Klebsiella* ESBL bacteremia- mortality and risk factors. *Braz J Infect Dis.* 15(6): 594-598.
- Walker R, Whittlesea C. 2012. *Clinical Pharmacy and Therapeutics*; Fifth Edition. London: Churchill Livingstone Elsevier.
- Waluyo L. 2004. *Mikrobiologi Umum*. Malang: Universitas Muhammadiyah Malang Press.
- Yuhamzi OM, Anggraini D, Zarfiardi AF. 2007. Pola resistensi dari sputum penderita penyakit paru obstruktif kronik (PPOK) eksaserbasi bagian paru RSUD Arifin Achmad Pekanbaru. [Skripsi]. Riau: Fakultas Kedokteran Universitas Riau
- Zarb P, Coignard B, Griskevicienne J, Muller A, Vankerckhoven V, Weist K, Goossens M, Vaerenberg S, Hopkins S, Catry B, Monnet D, Goosens H, Suetens C. 2012. *The European Centre for Disease Prevention and Control (ECDC) pilot point prevalence survey of healthcare-associated infections and antimicrobial use*. *Euro Surveill.* 17(46):1 – 16.
- Zhanel GG, Wiebe R, Dilay L, Thomson K, Rubinstein E, Hoban DJ, Noreddin AM, Karlowsky JA. 2007. *Comparative review of carbapenem Drugs*. 67(7):1027–1052.

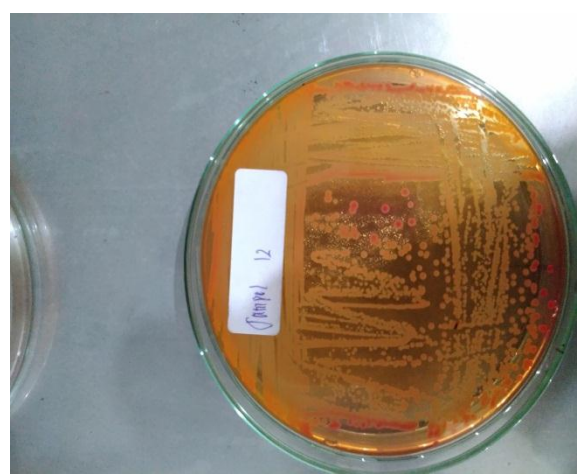
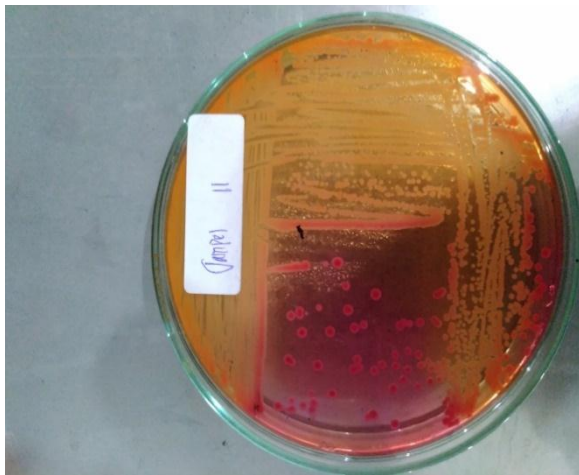
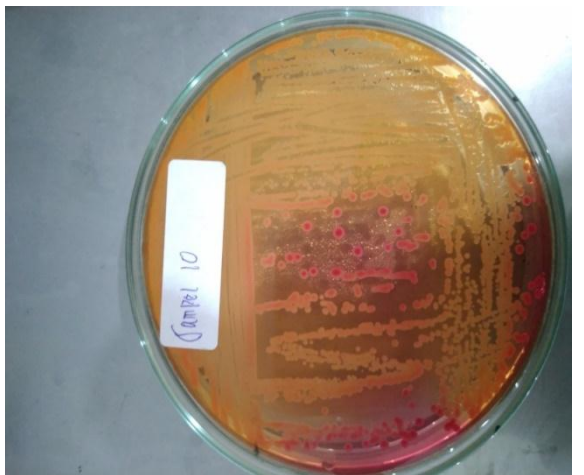
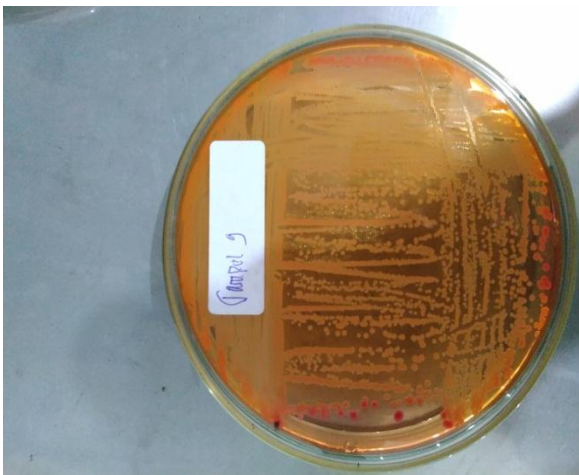
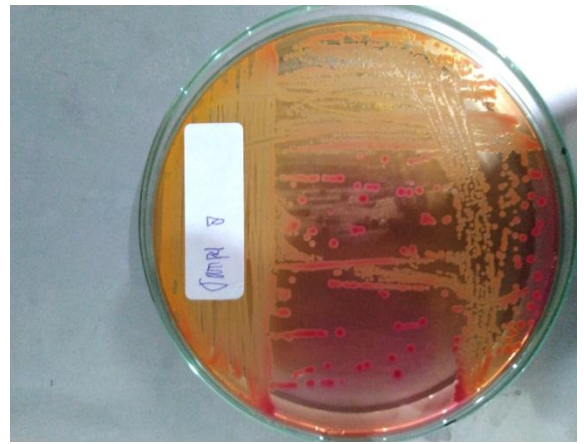
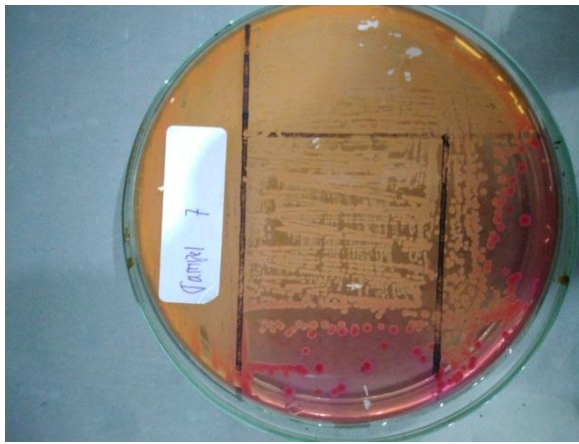
L
A
M
P
I
R
A
N

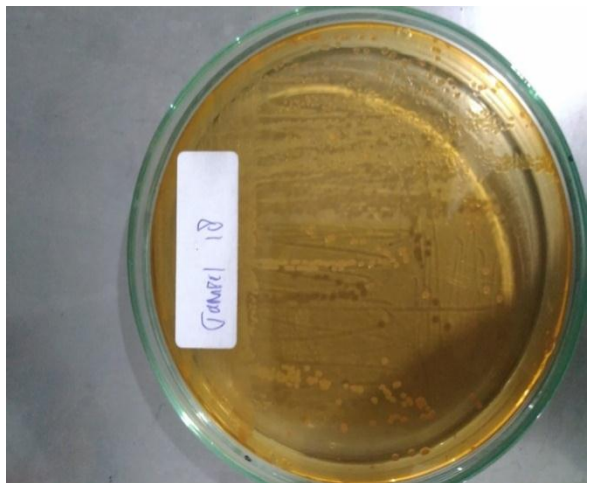
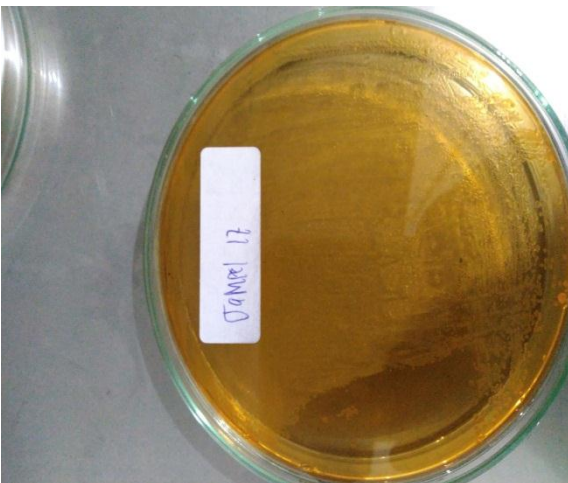
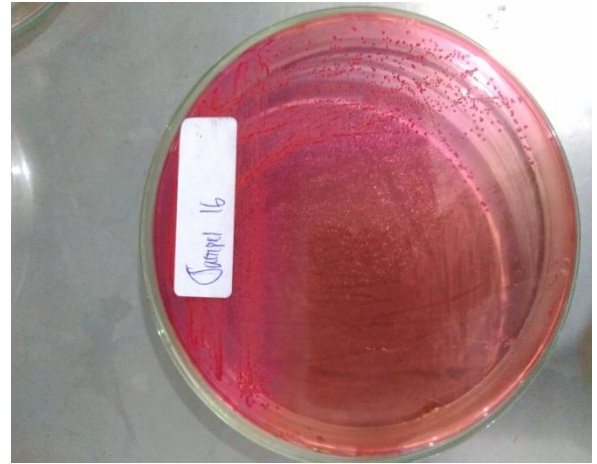
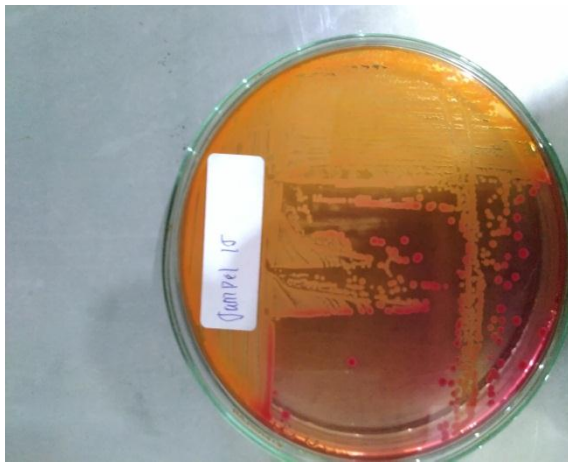
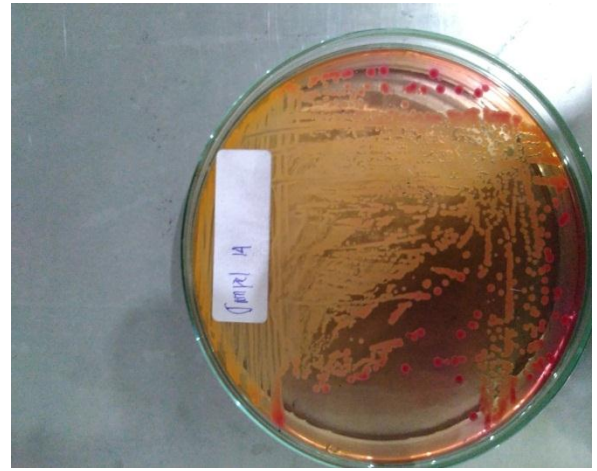
**Lampiran 1. Sampel sputum pasien pneumonia di RSUD Dr. Moewardi
Surakarta**

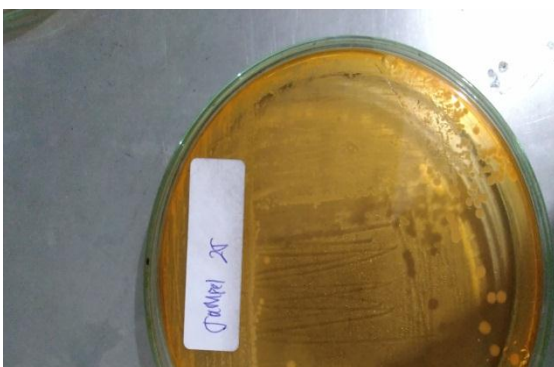
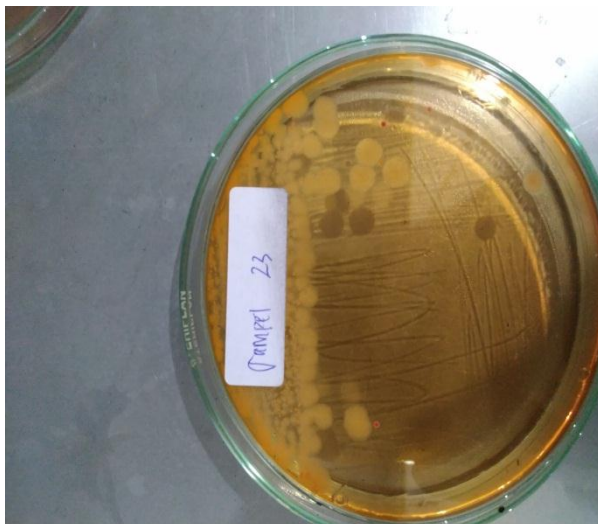
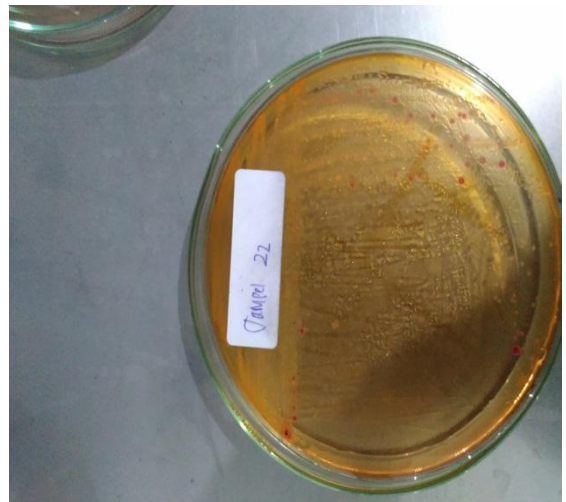
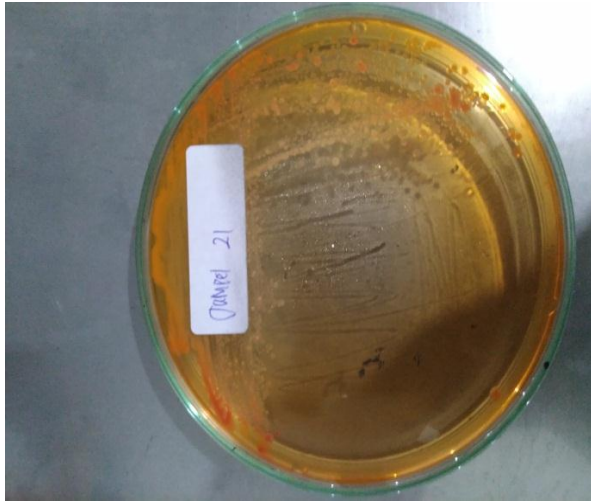


Lampiran 2. Hasil isolasi bakteri *Klebsiella sp.* dari sputum pasien pneumonia pada media *Mac Conkey*

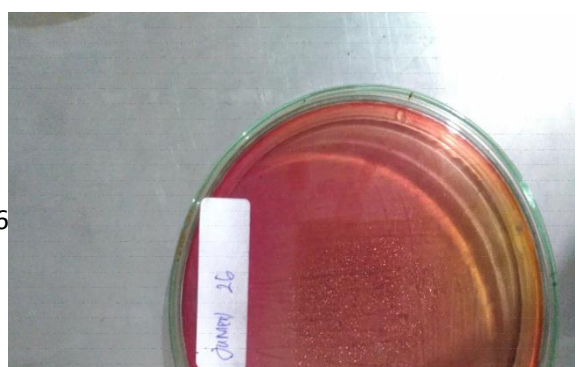


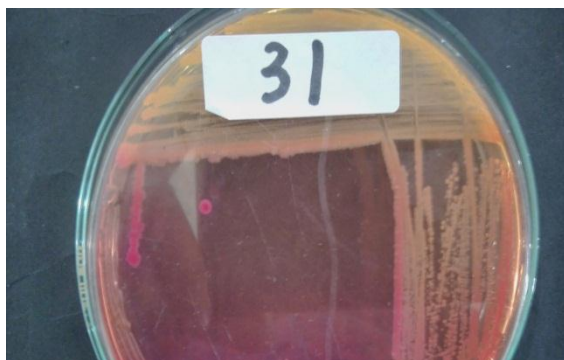
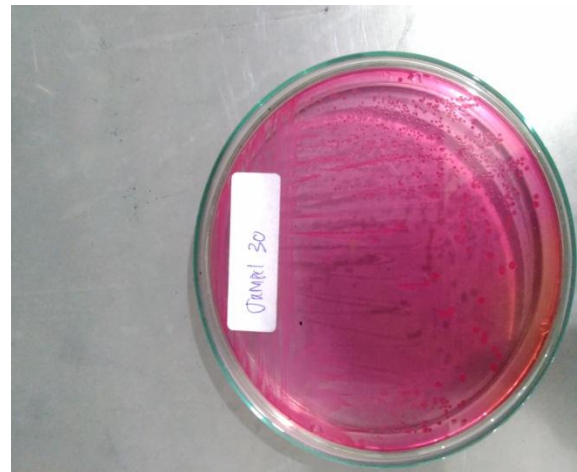
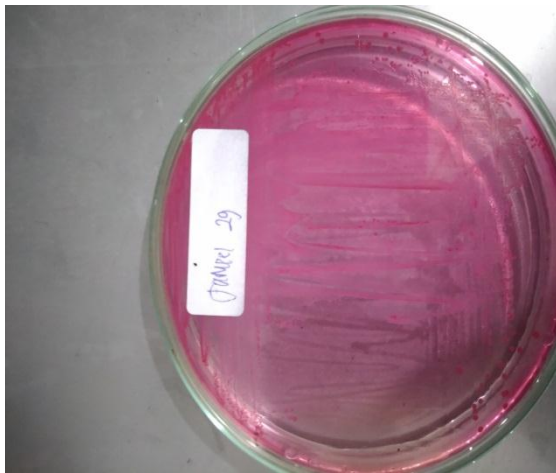
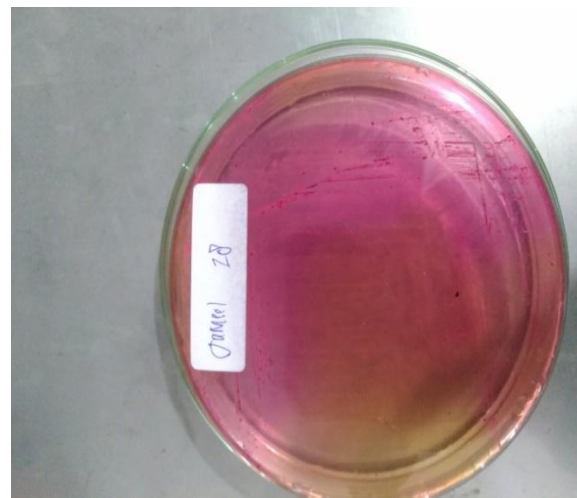
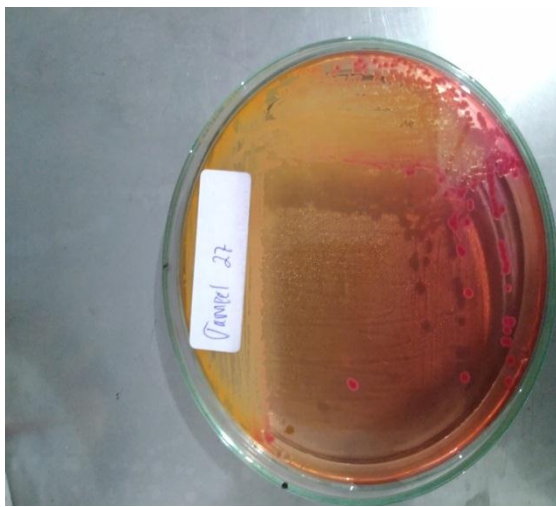


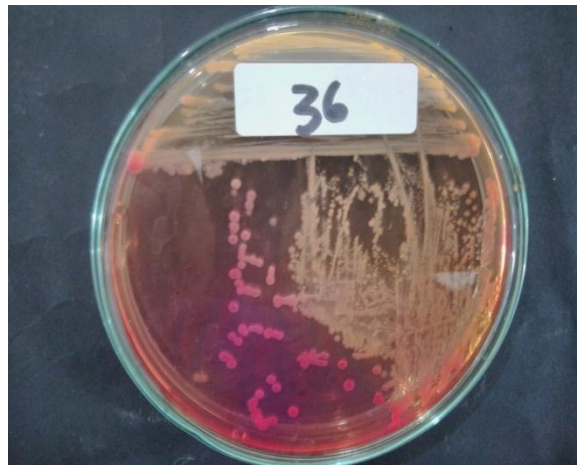
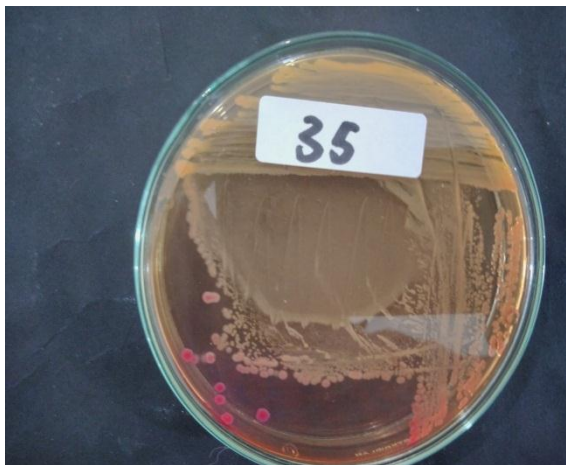
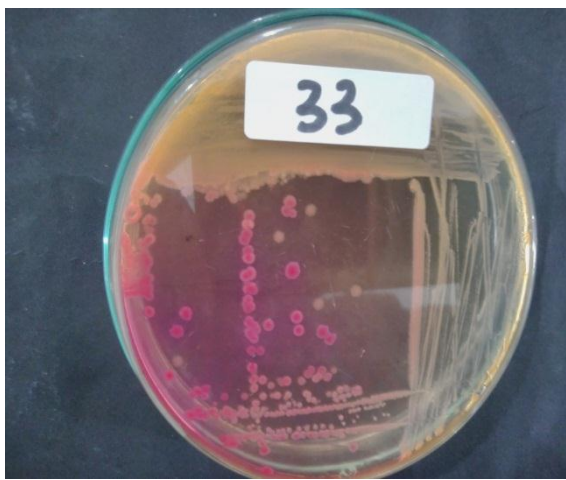


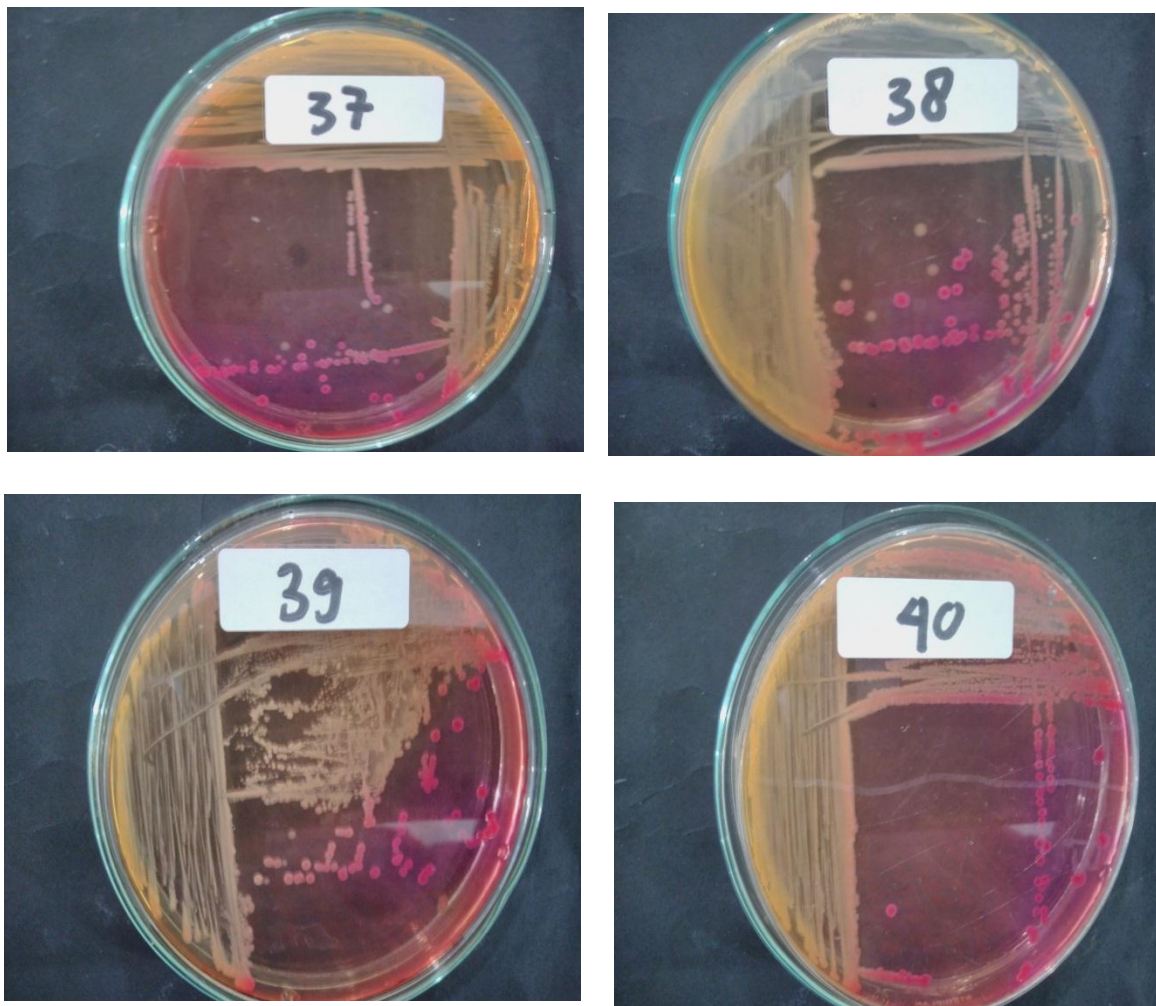


6

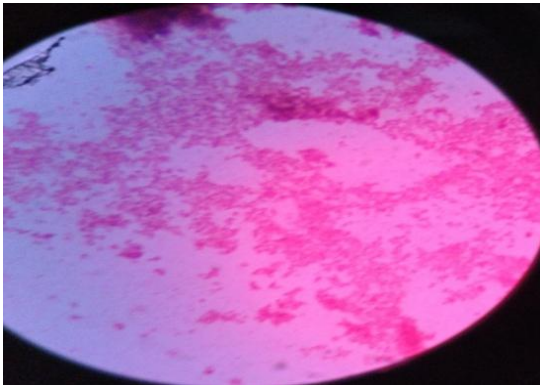




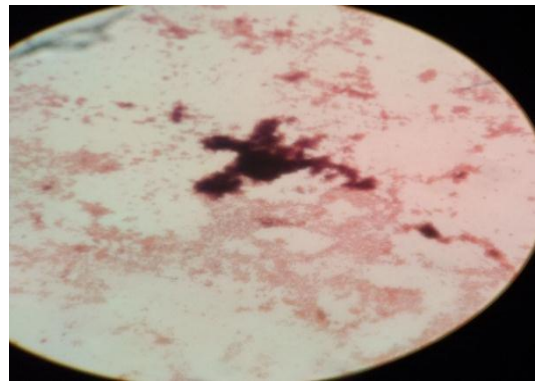




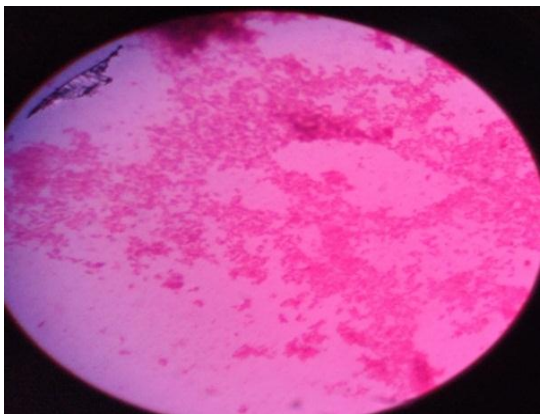
Lampiran 3. Hasil identifikasi bakteri *Klebsiella sp.* dengan pewarnaan Gram



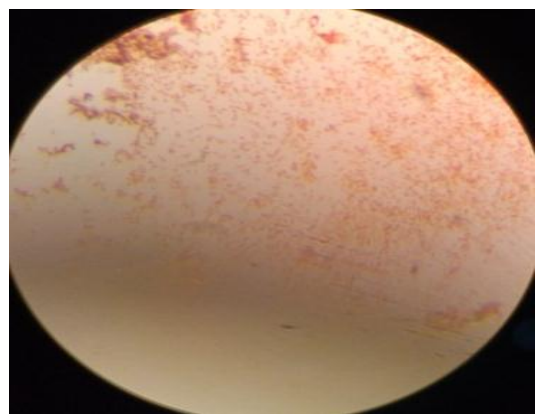
Sampel 1



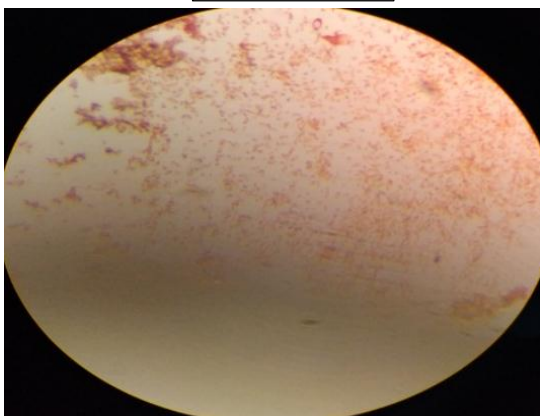
Sampel 2



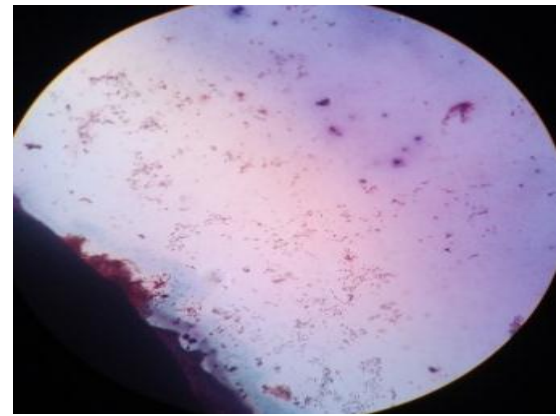
Sampel 3



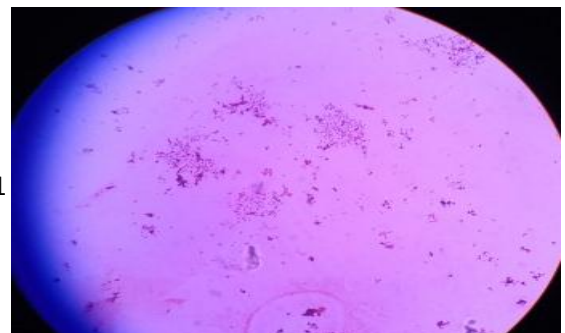
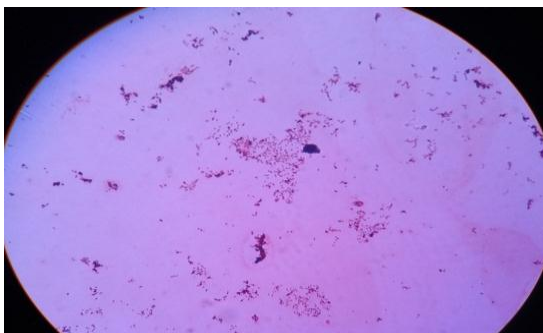
Sampel 4



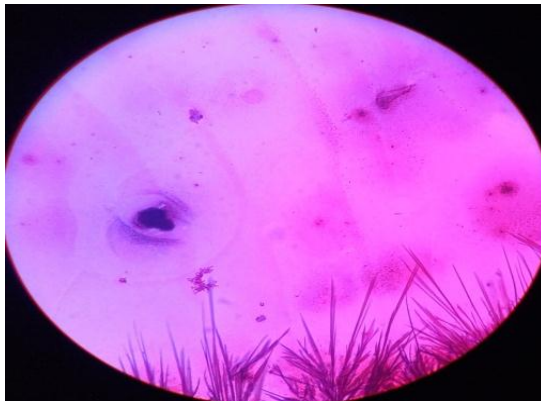
Sampel 5



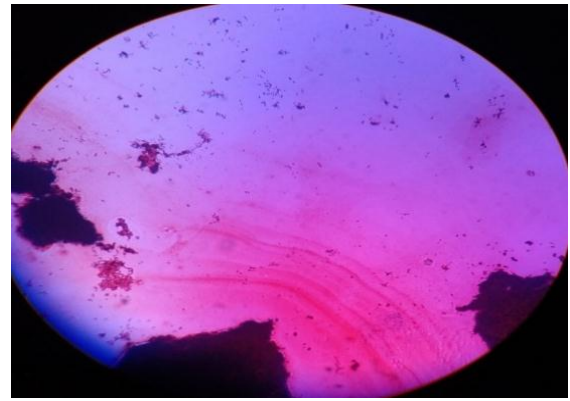
Sampel 6



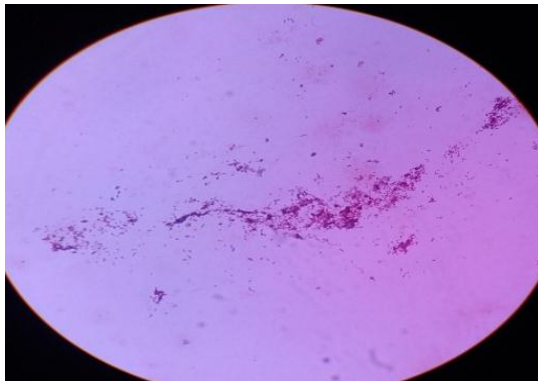
Sampel 7



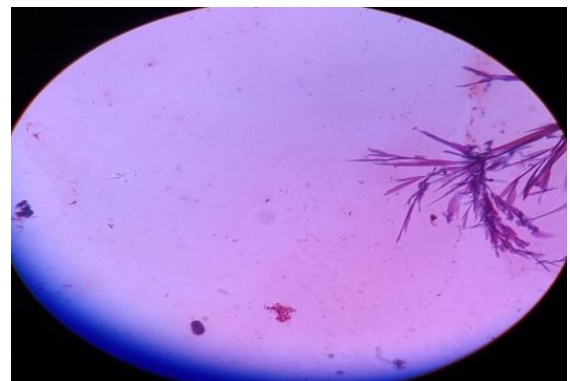
Sampel 8



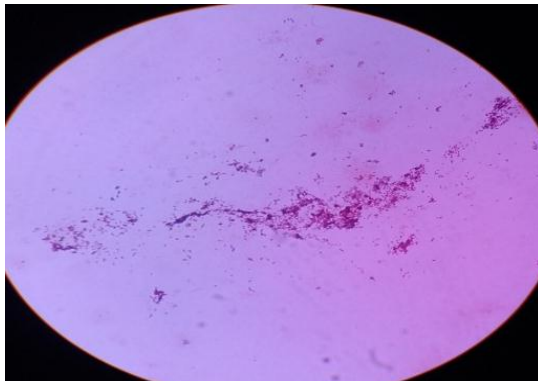
Sampel 9



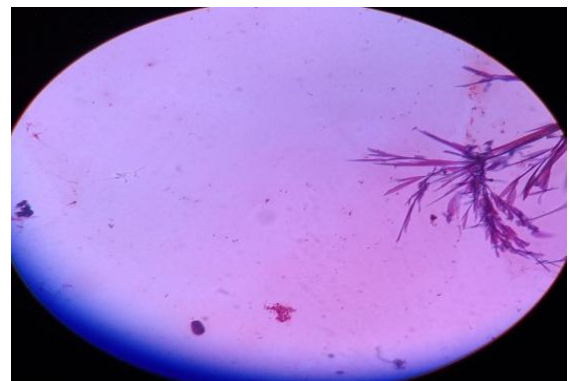
Sampel 10

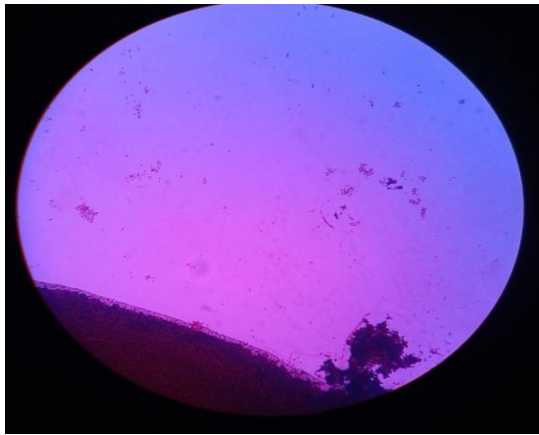


Sampel 11

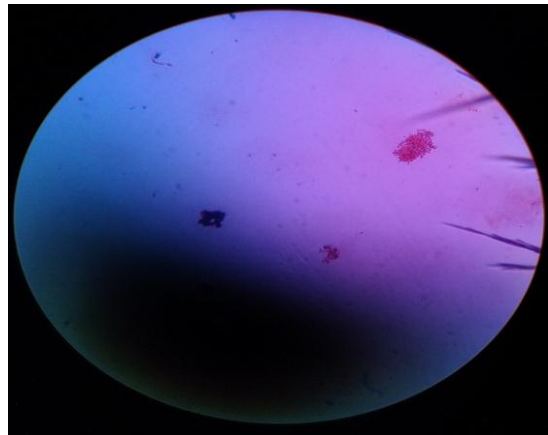


Sampel 12

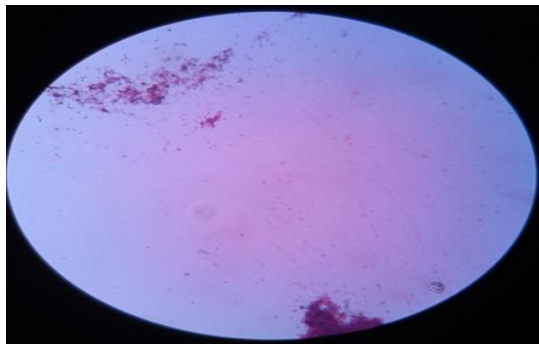




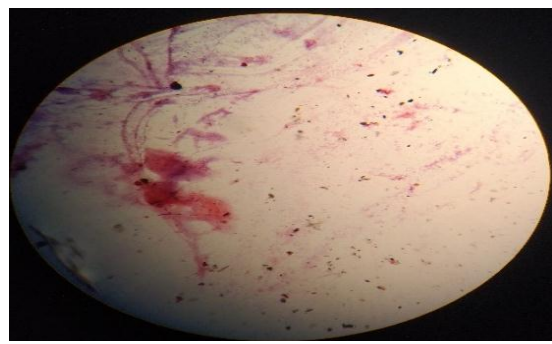
Sampel 13



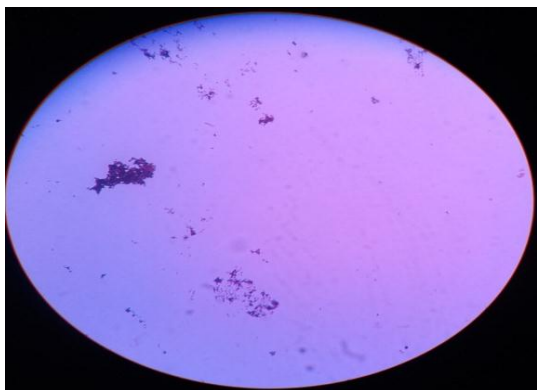
Sampel 14



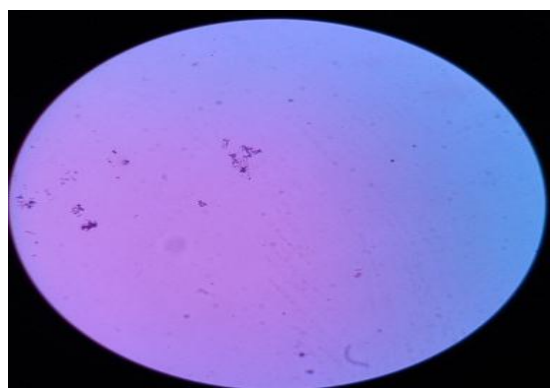
Sampel 15



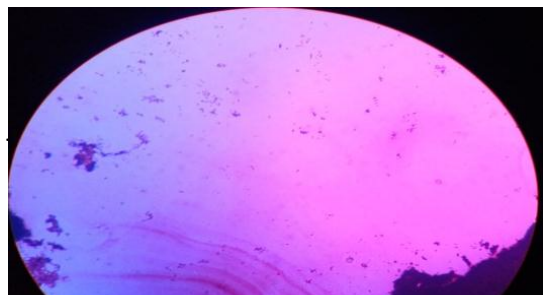
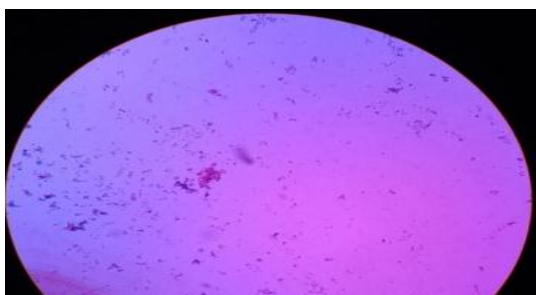
Sampel 16



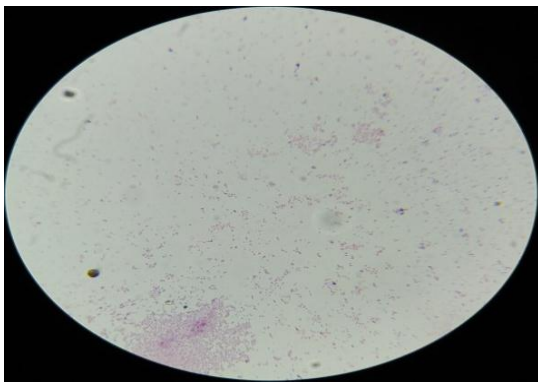
Sampel 17



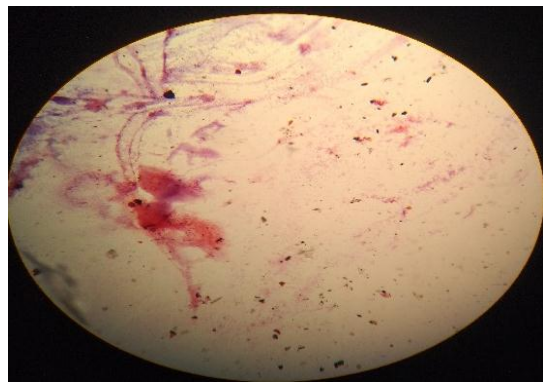
Sampel 18



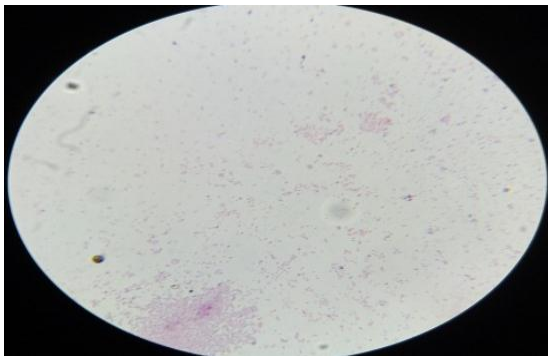
Sampel 19



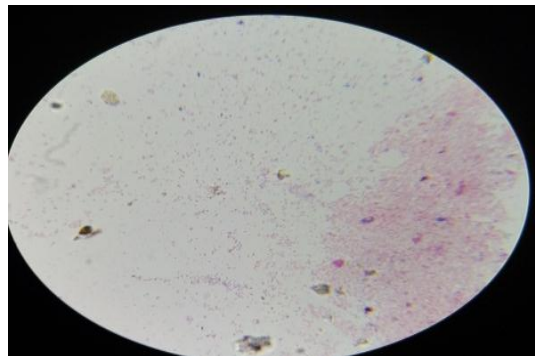
Sampel 20



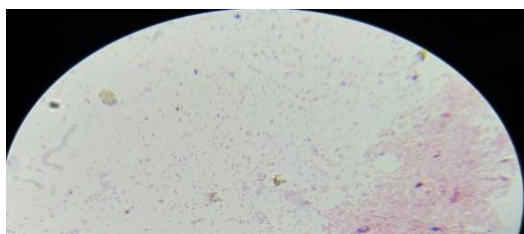
Sampel 21



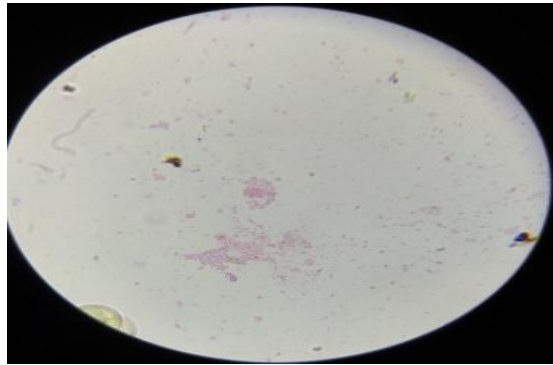
Sampel 22



Sampel 23

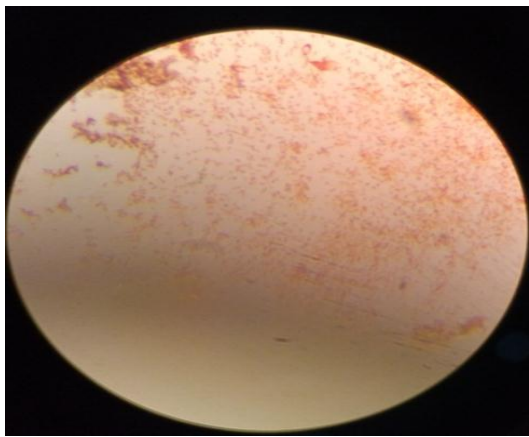


Sampel 25

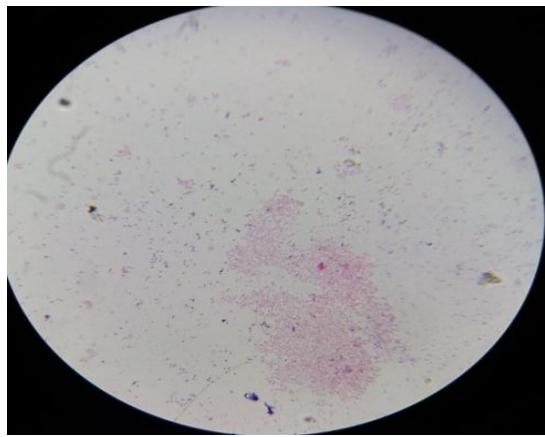


Sampel 29

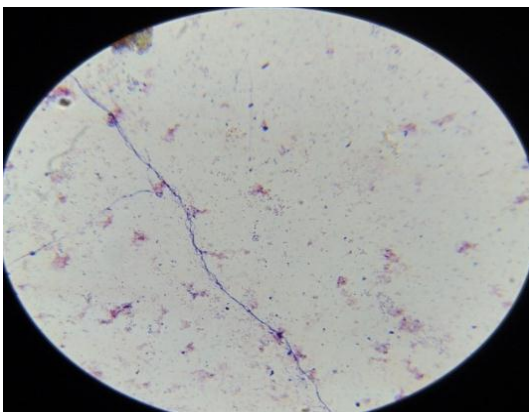
Sampel 27



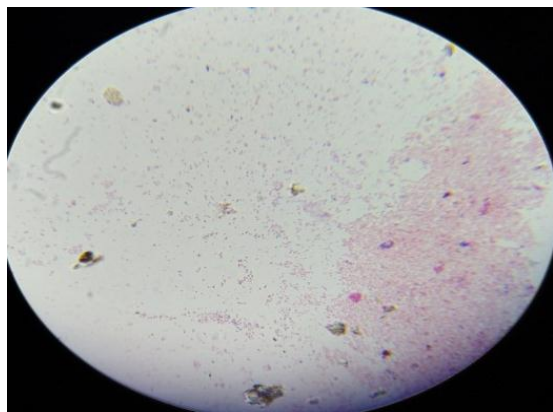
Sampel 30



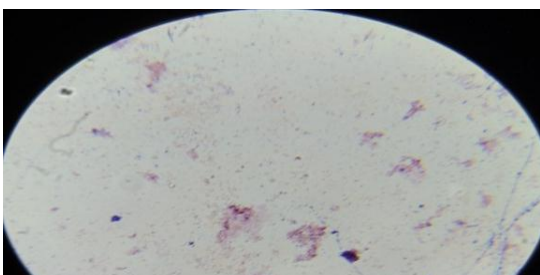
Sampel 31



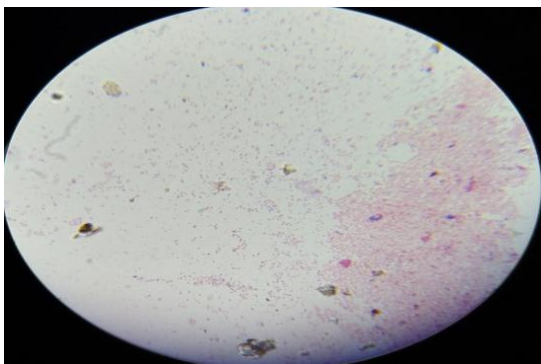
Sampel 32



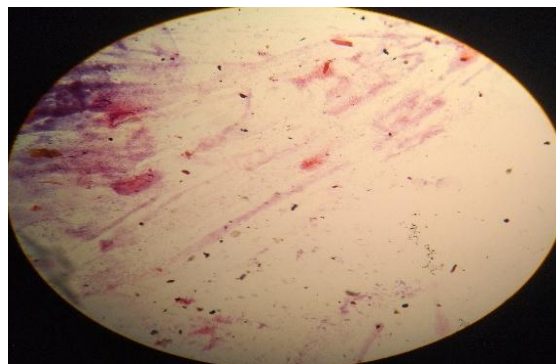
Sampel 33



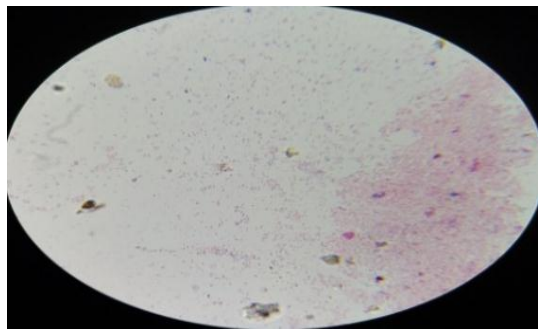
Sampel 34



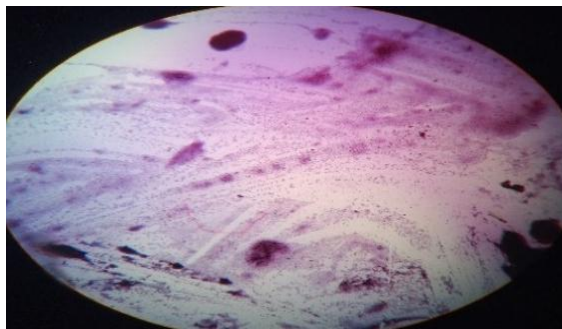
Sampel 35



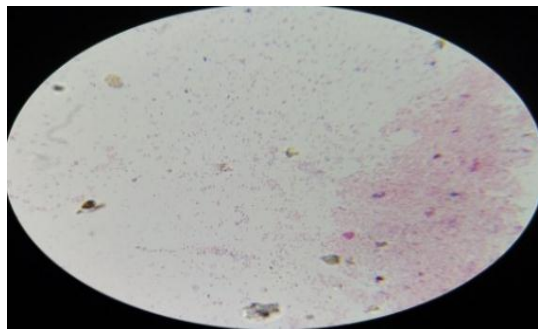
Sampel 36



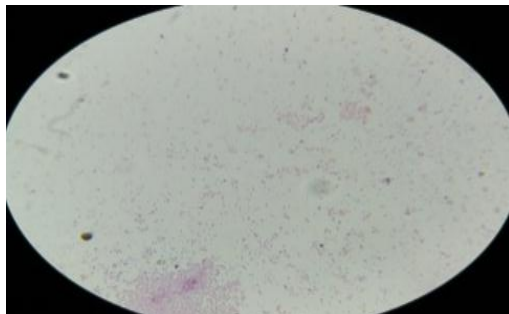
Sampel 37



Sampel 38

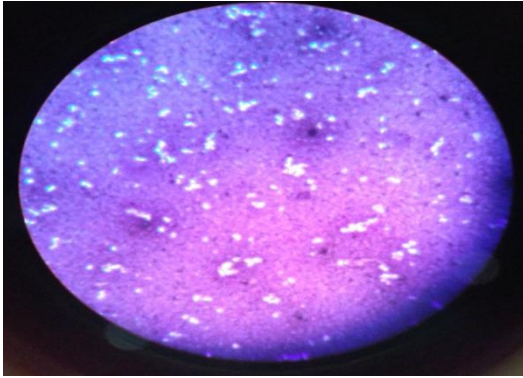


Sampel 39

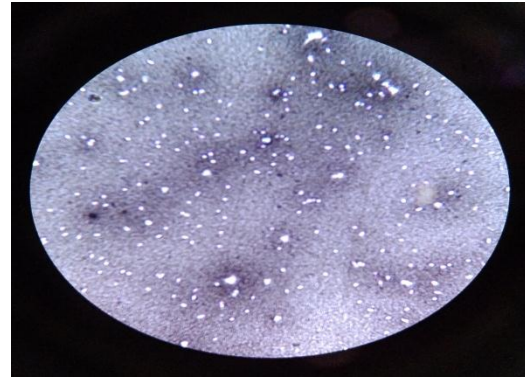


Sampel 40

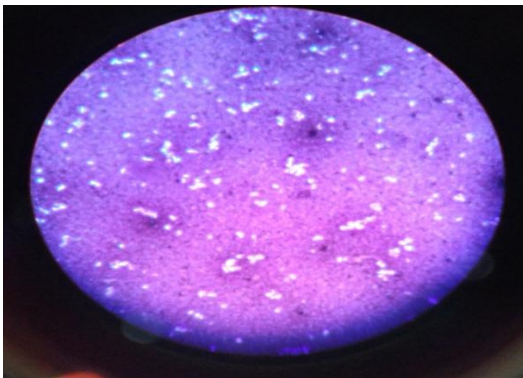
Lampiran 4. Hasil identifikasi bakteri *Klebsiella sp.* dengan pengecatan kapsul



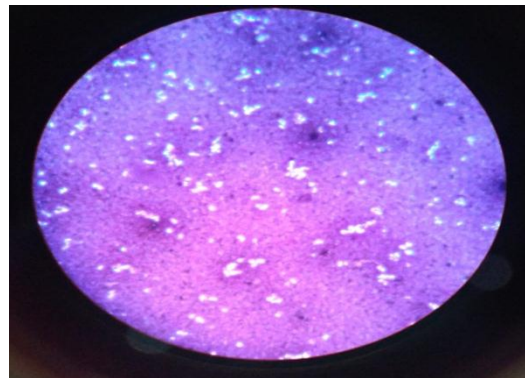
Sampel 1



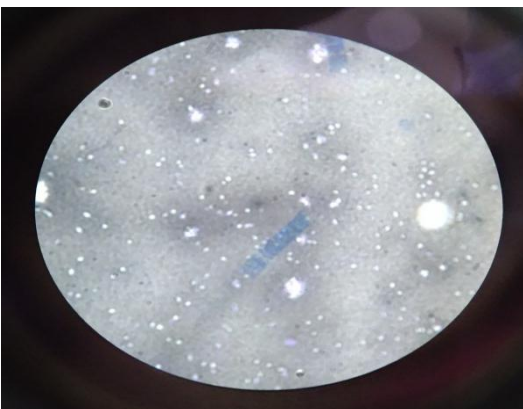
Sampel 2



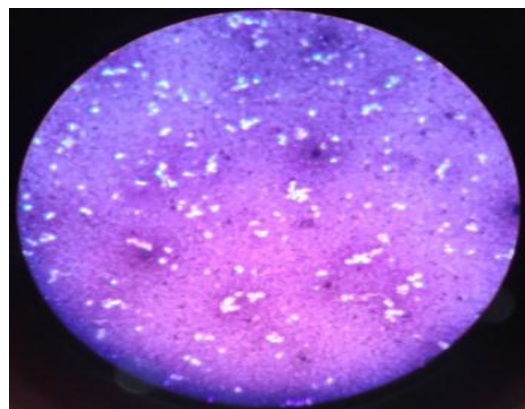
Sampel 3



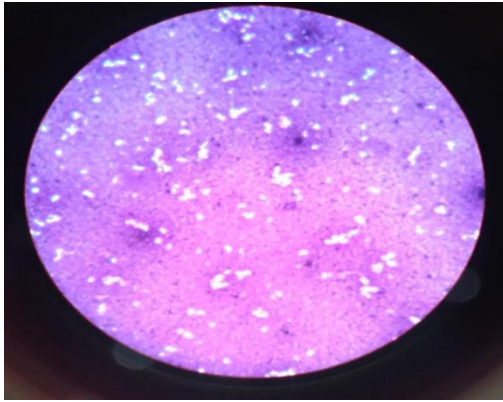
Sampel 4



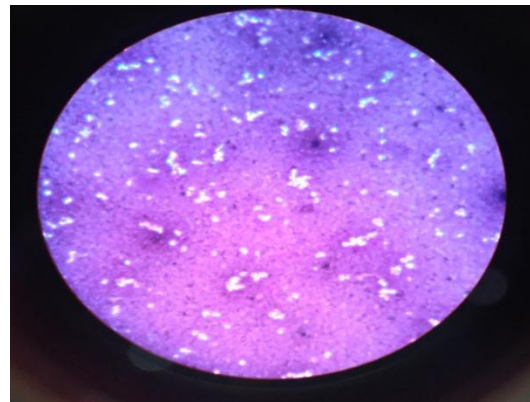
Sampel 5



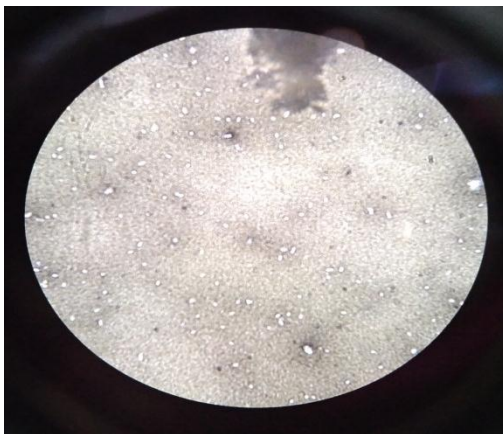
Sampel 6



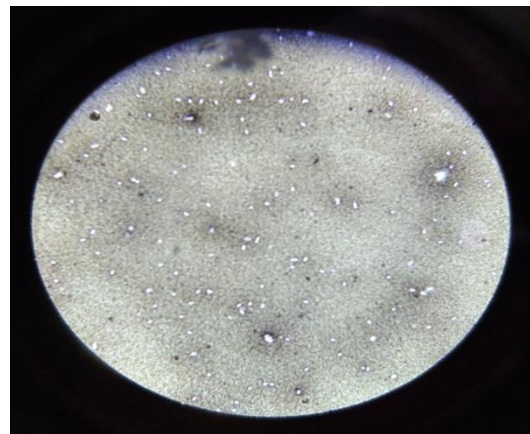
Sampel 7



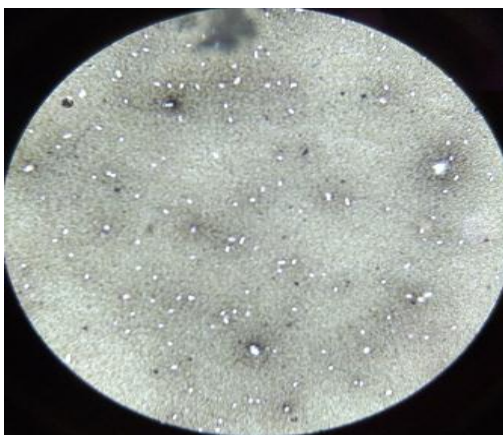
Sampel 8



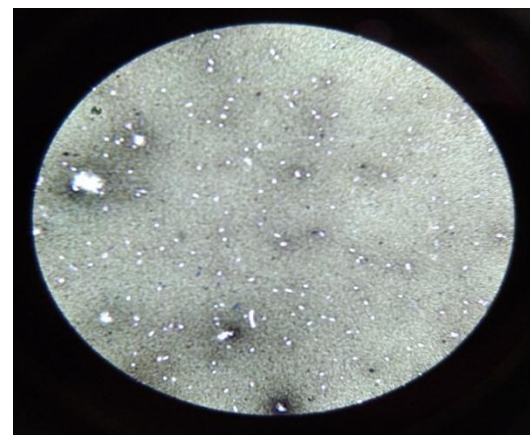
Sampel 9



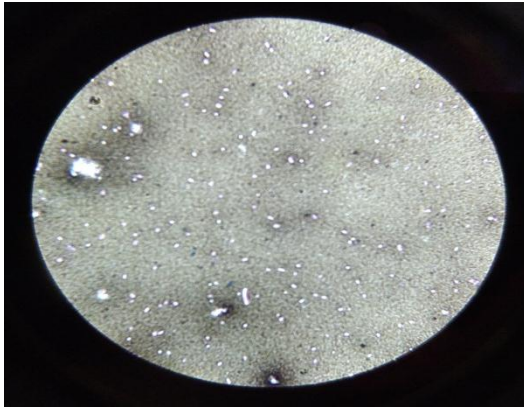
Sampel 10



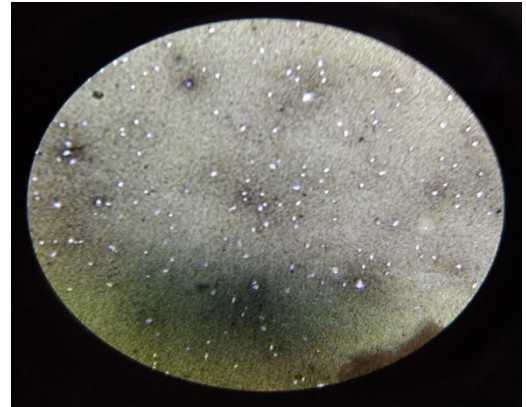
Sampel 11



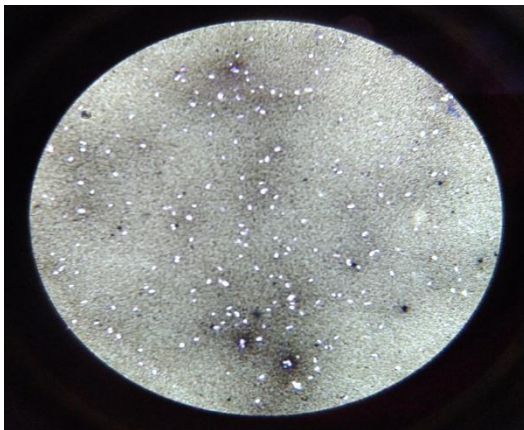
Sampel 12



Sampel 13



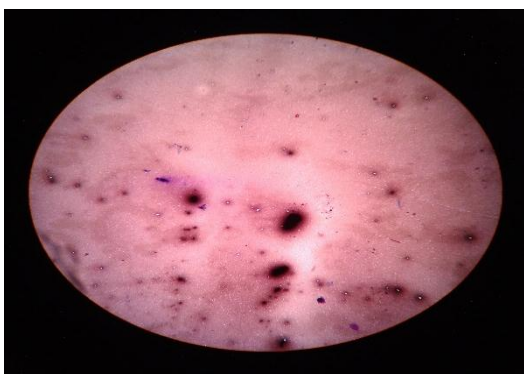
Sampel 14



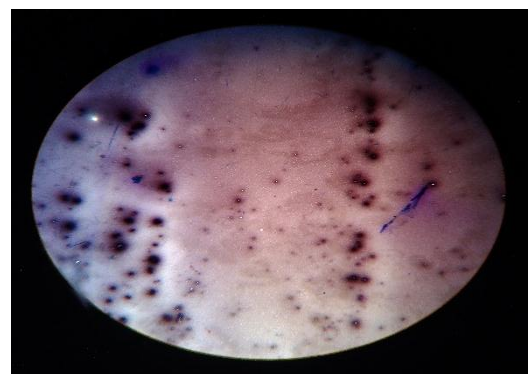
Sampel 15



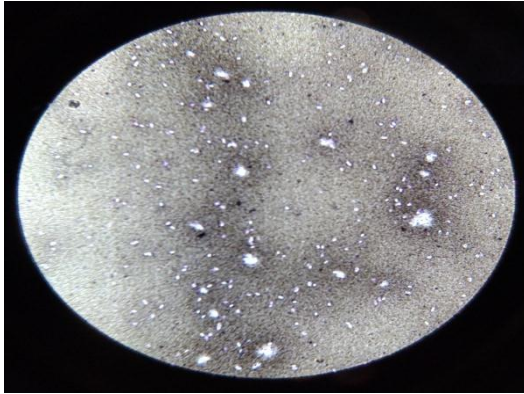
Sampel 16



Sampel 17



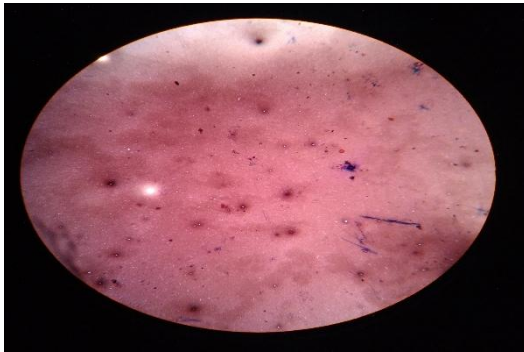
Sampel 18



Sampel 19



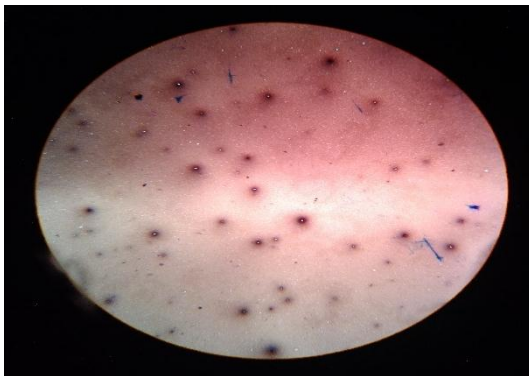
Sampel 20



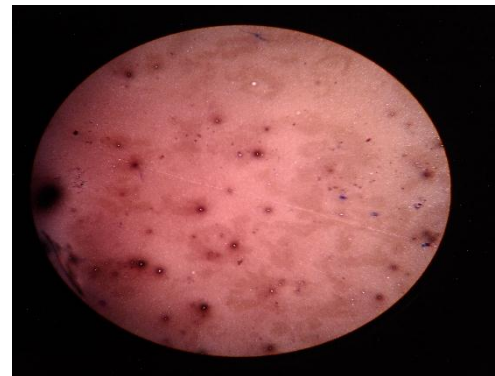
Sampel 21



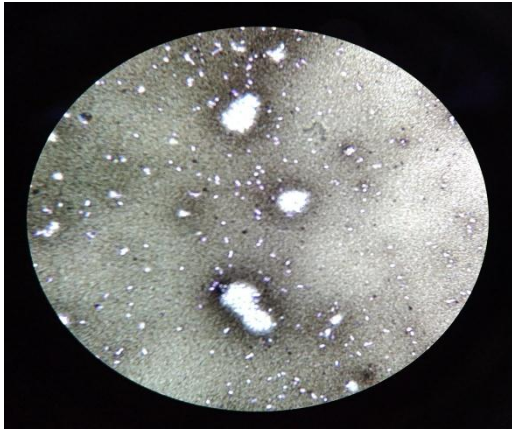
Sampel 22



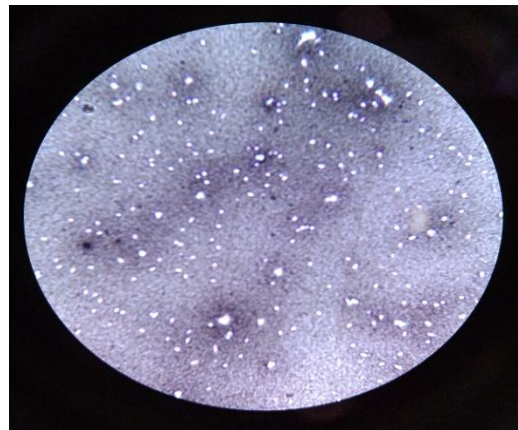
Sampel 23



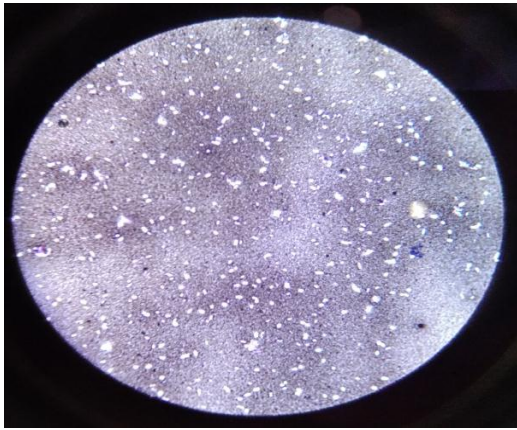
Sampel 25



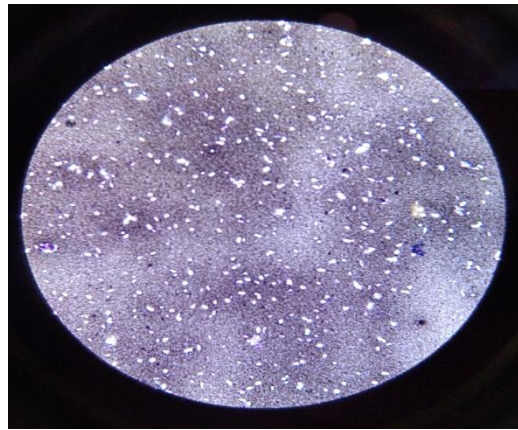
Sampel 27



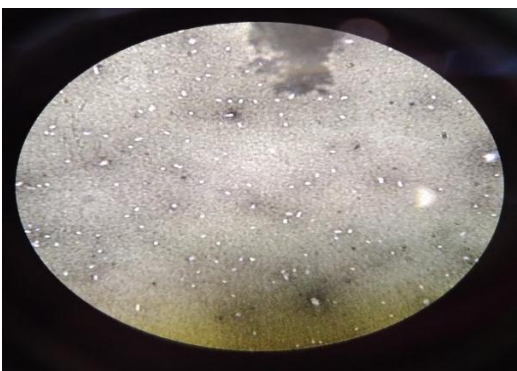
Sampel 29



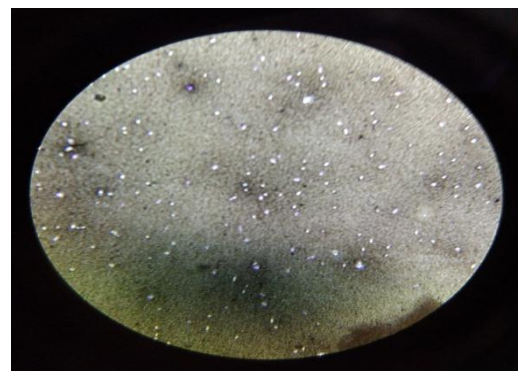
Sampel 30



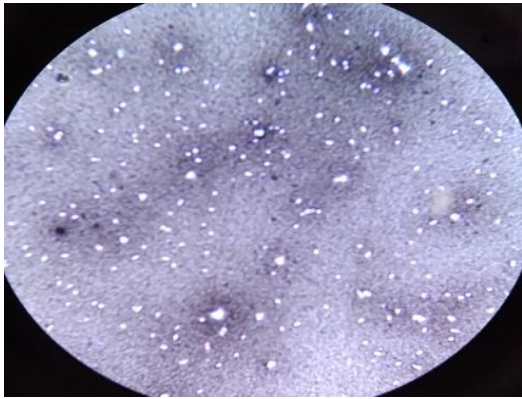
Sampel 31



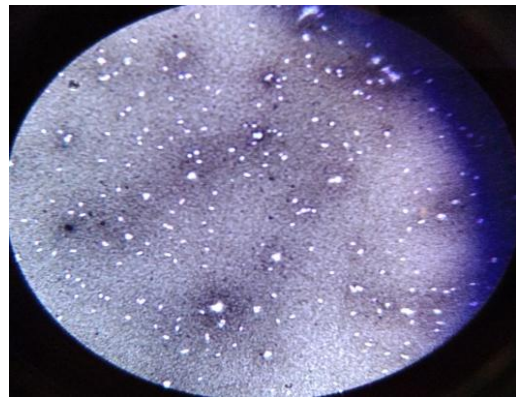
Sampel 32



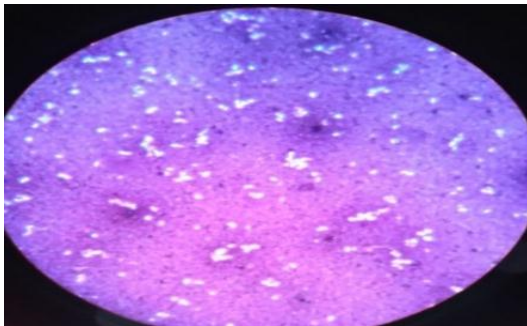
Sampel 33



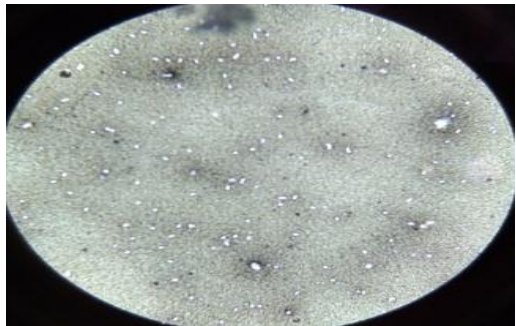
Sampel 34



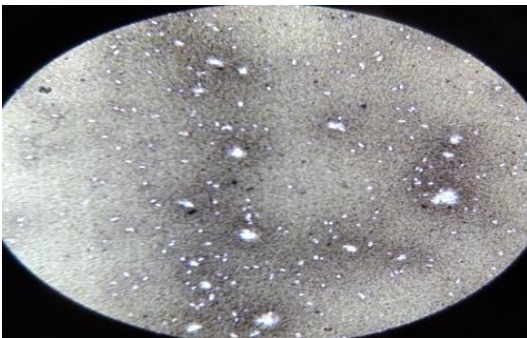
Sampel 35



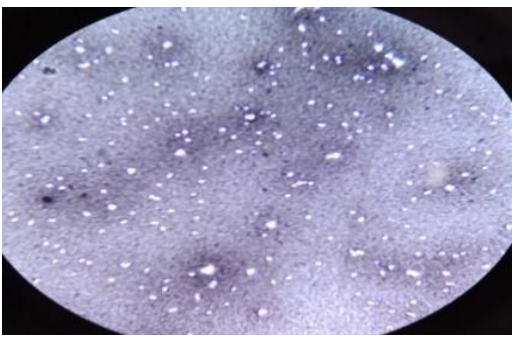
Sampel 36



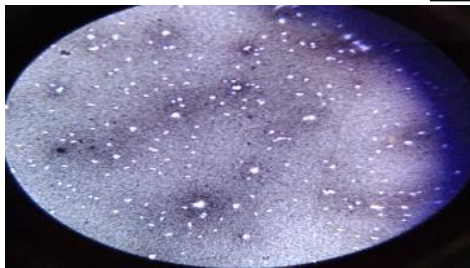
Sampel 37



Sampel 38



Sampel 39



Sampel 40

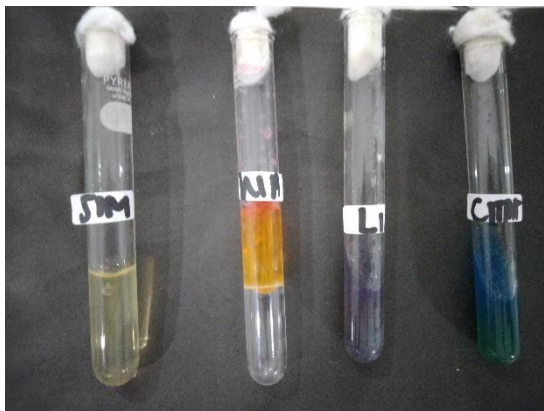
Lampiran 5. Hasil identifikasi bakteri *Klebsiella sp.* dengan uji biokimia



Sampel 1



Sampel 2



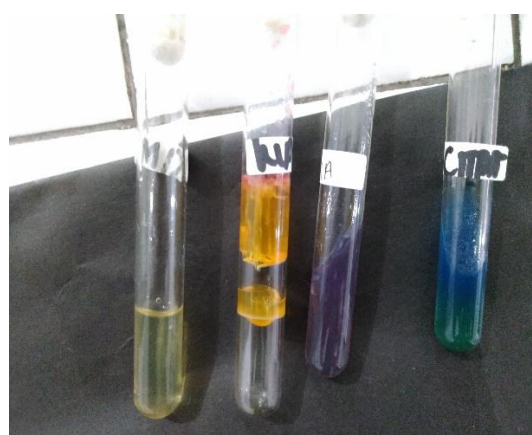
Sampel 3



Sampel 4



Sampel 5



Sampel 6



Sampel 7



Sampel 8



Sampel 9



Sampel 10



Sampel 11



Sampel 12



Sampel 13



Sampel 14



Sampel 15



Sampel 16



Sampel 17



Sampel 18



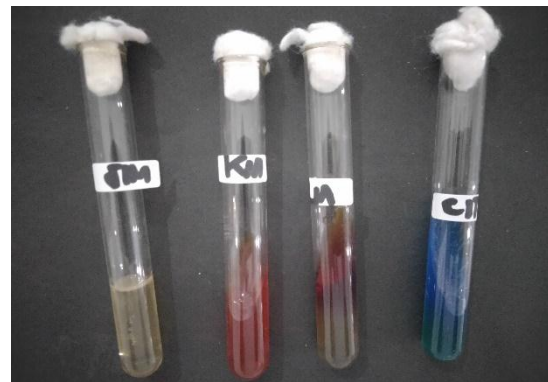
Sampel 19



Sampel 20



Sampel 21



Sampel 22



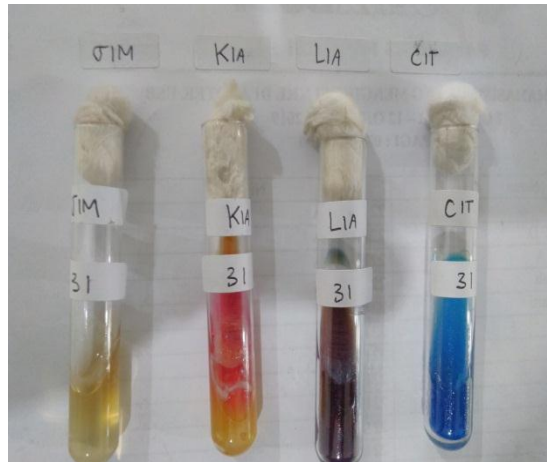
Sampel 23



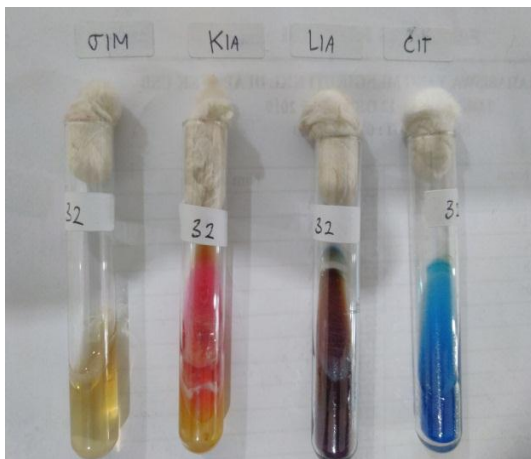
Sampel 25



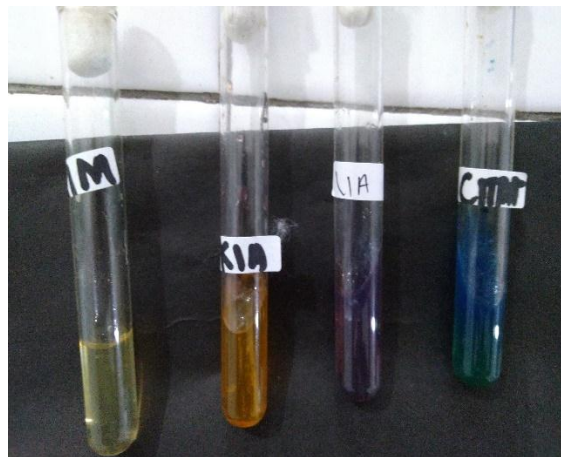
Sampel 27



Sampel 29



Sampel 30



Sampel 31



Sampel 32



Sampel 33



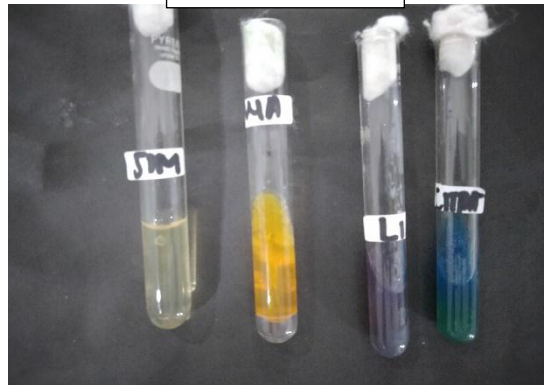
Sampel 34



Sampel 35



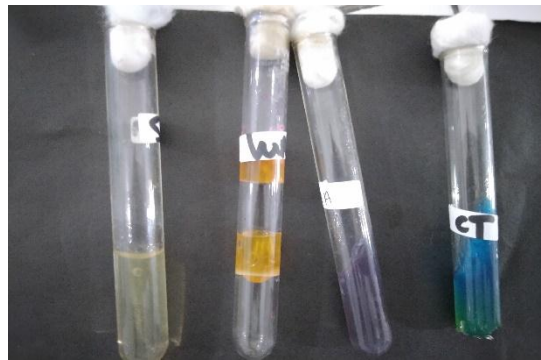
Sampel 36



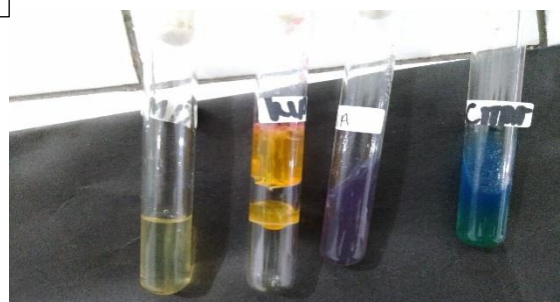
Sampel 37



Sampel 38

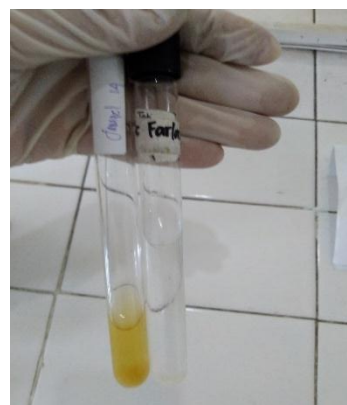


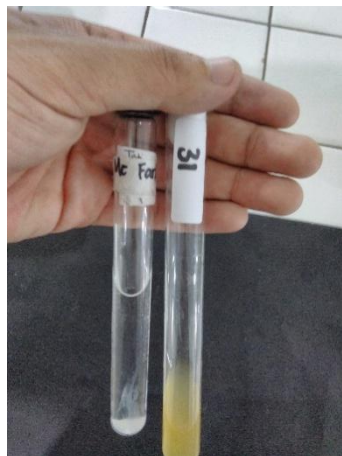
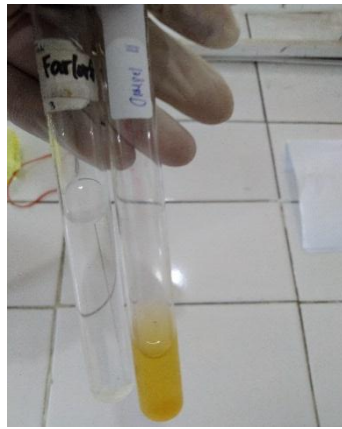
Sampel 39

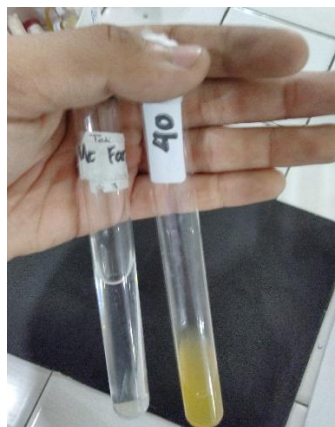
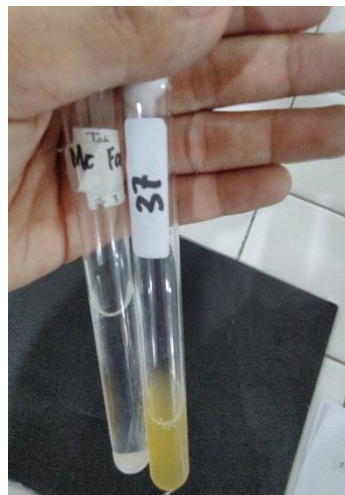


Sampel 40

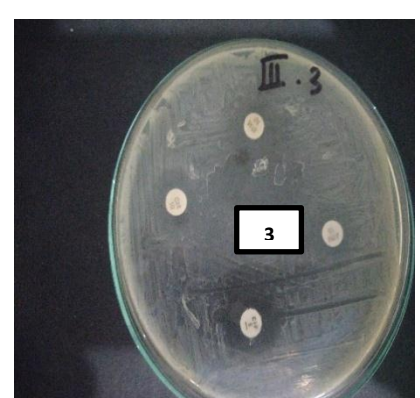
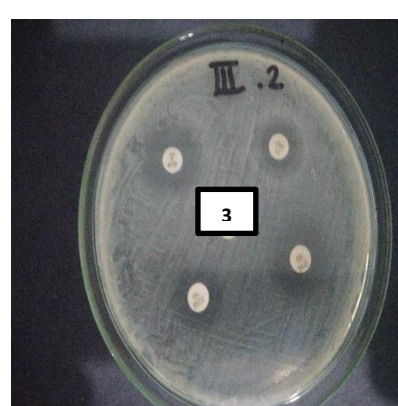
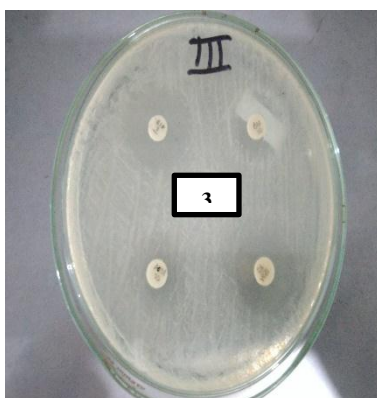
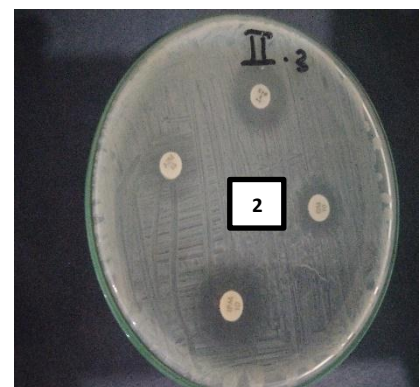
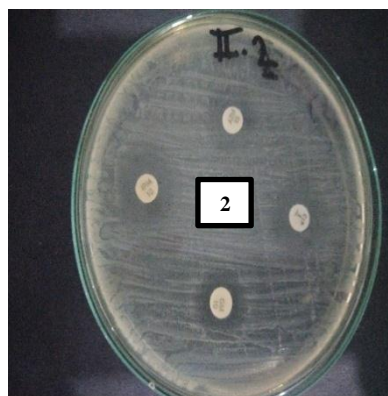
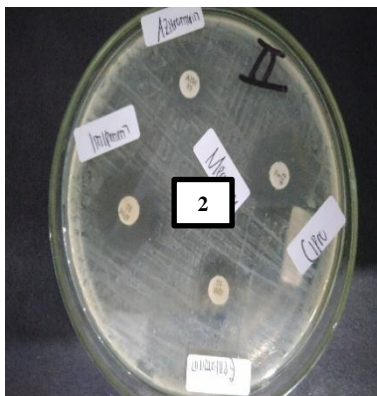
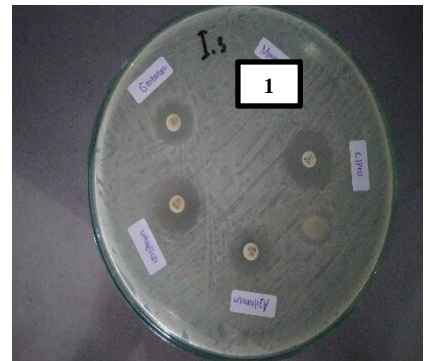
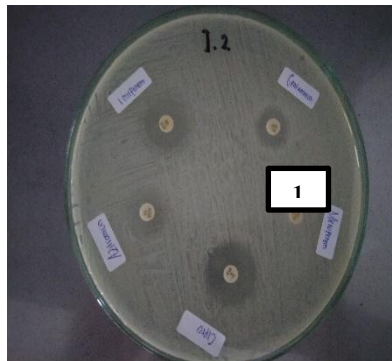
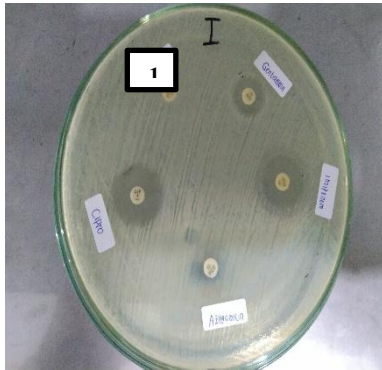
Lampiran 6. Penyetaraan dengan standar Mac Farland 0,5

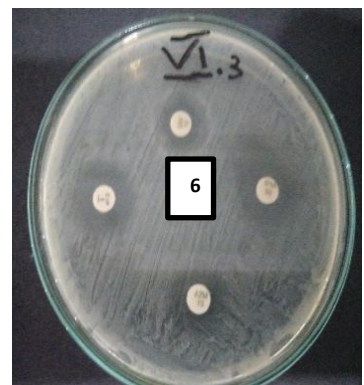
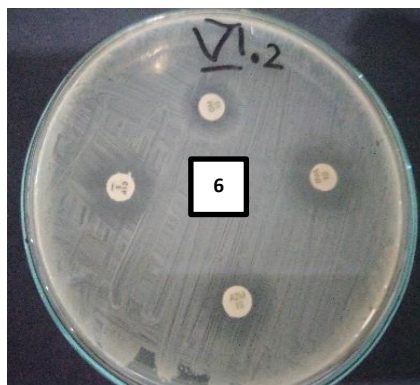
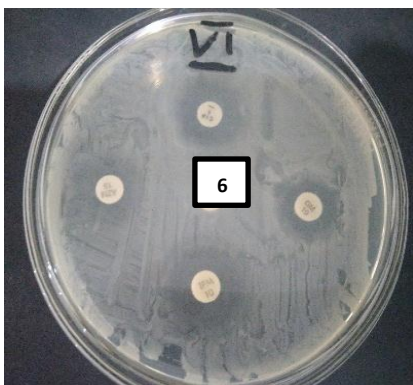
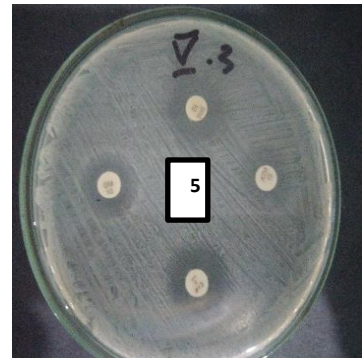
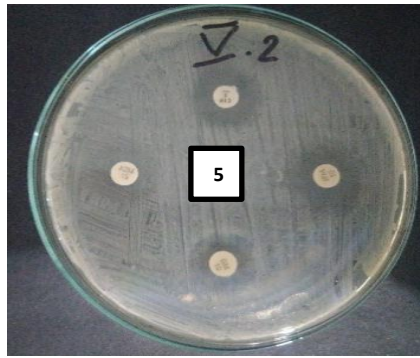
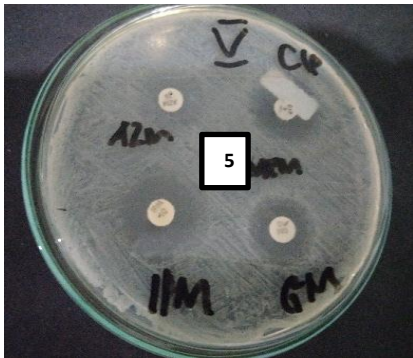
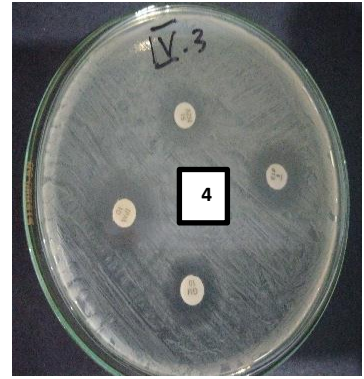
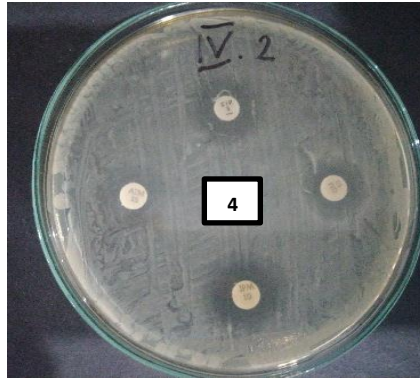
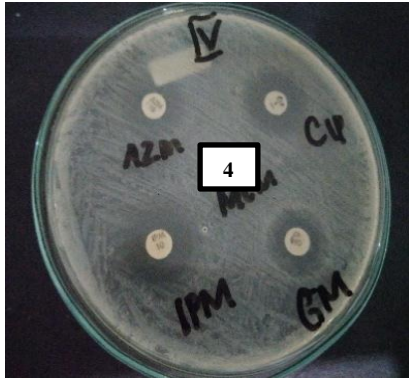


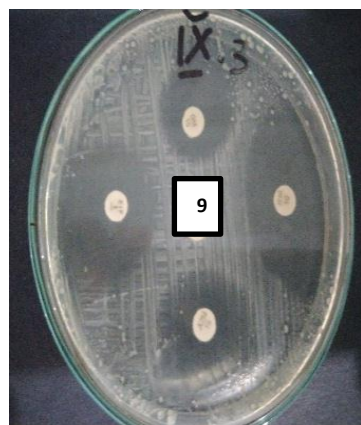
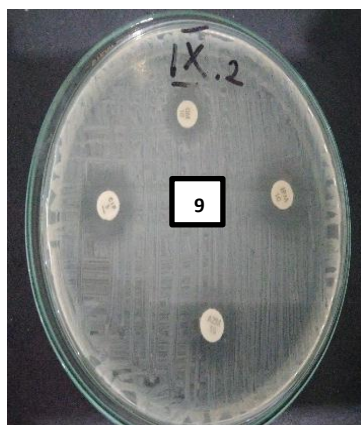
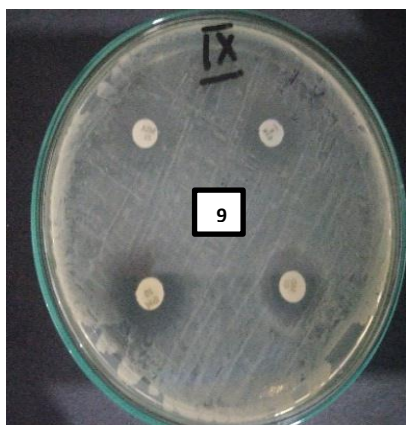
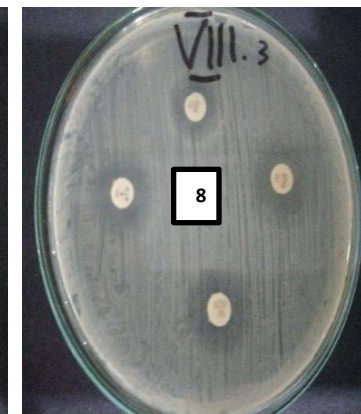
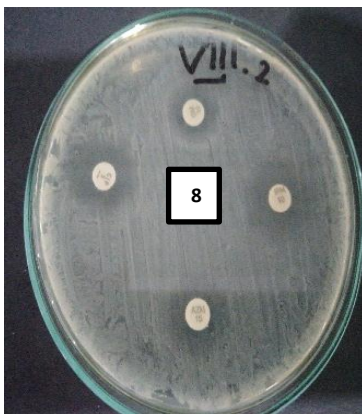
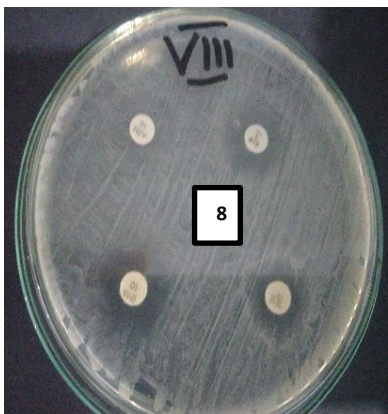
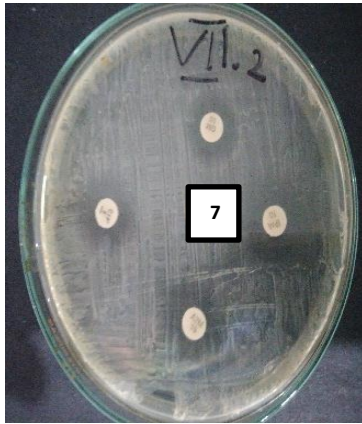
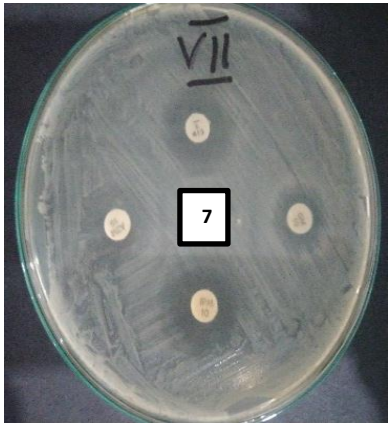


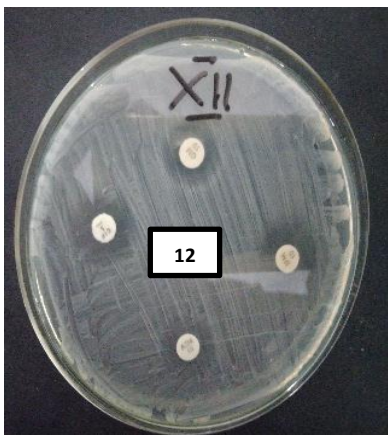
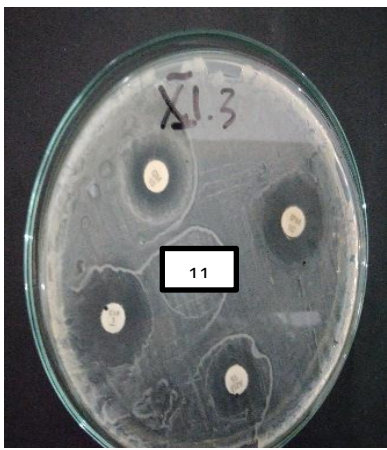
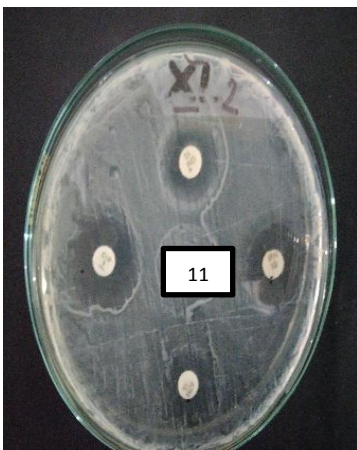
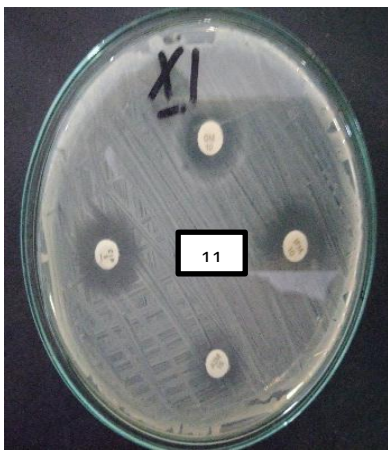
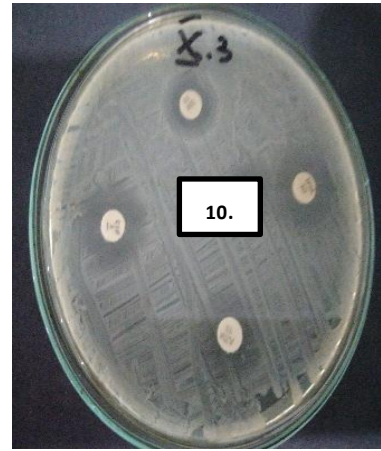
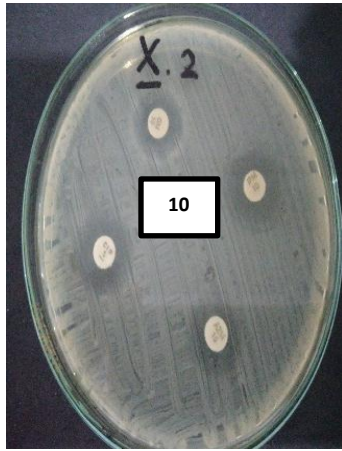
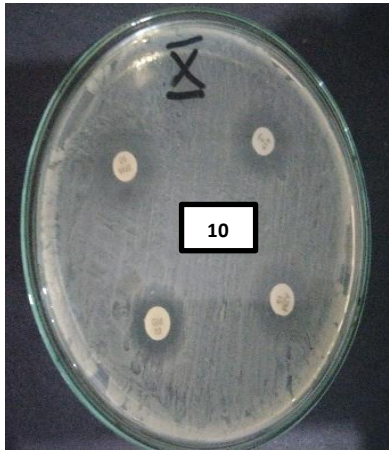


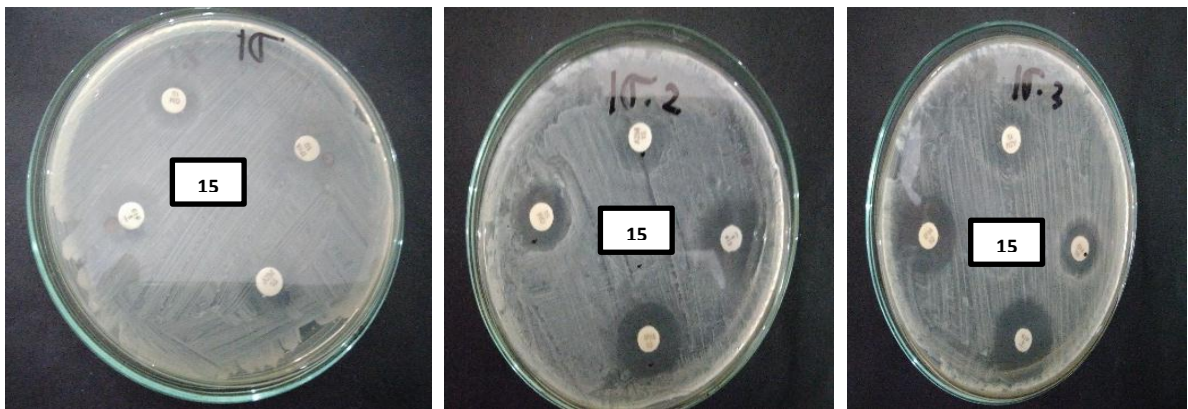
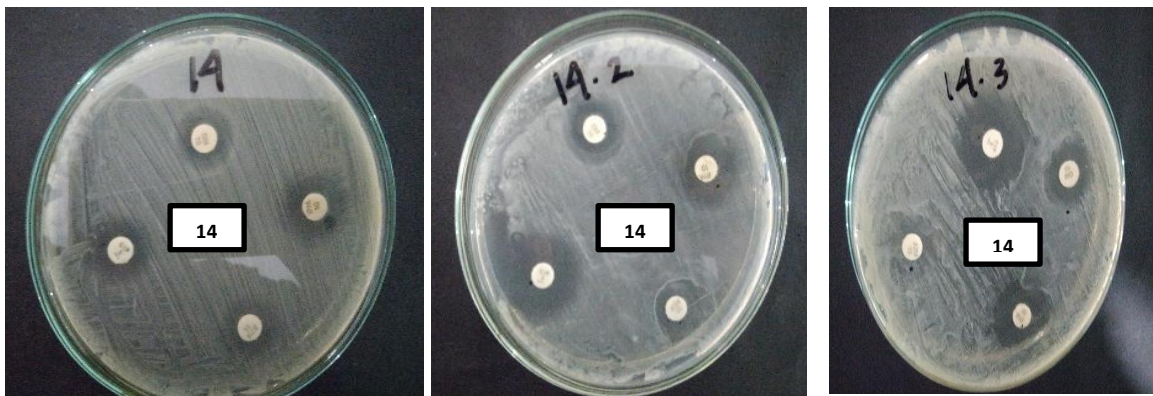
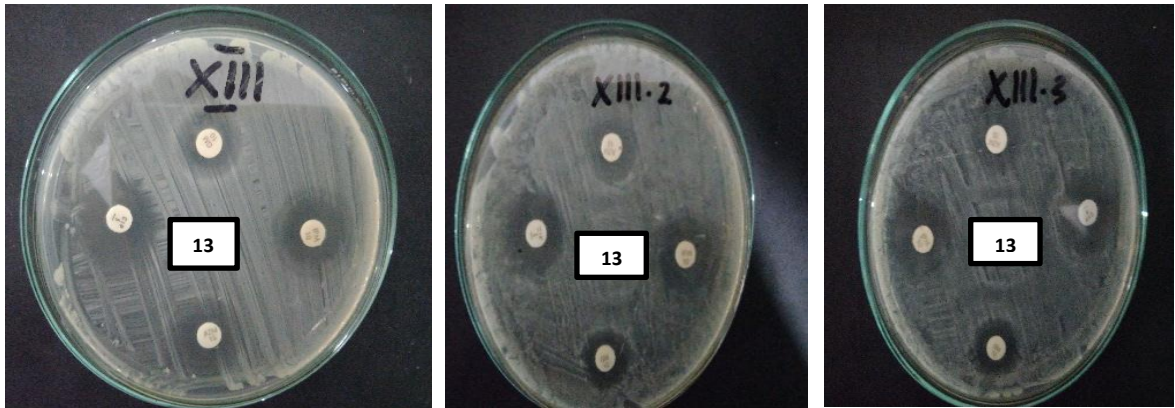
Lampiran 7. Diameter zona hambat antibiotik ciprofloksasin, azitromisin, imipenem, gentamisin, dan meropenem

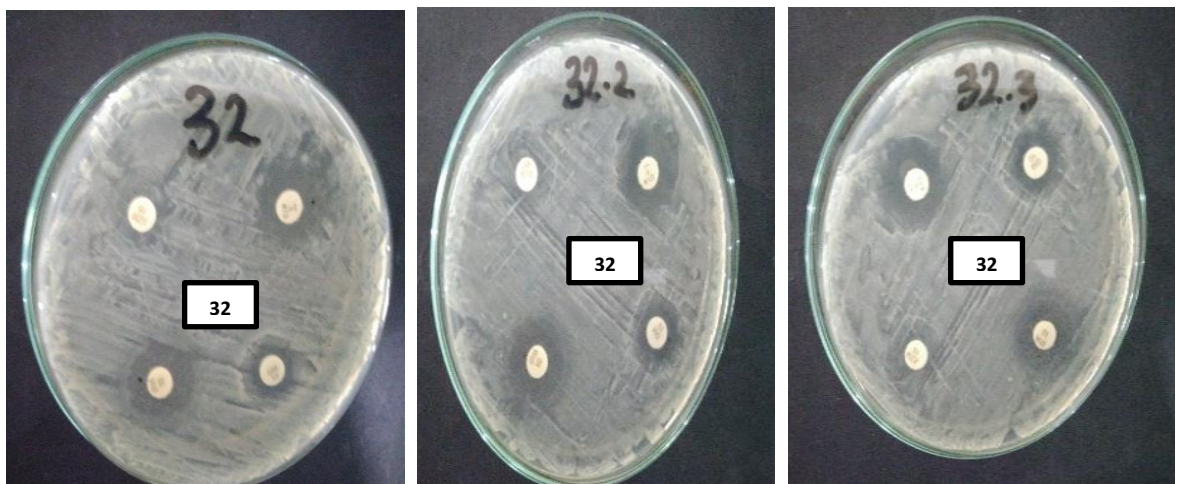
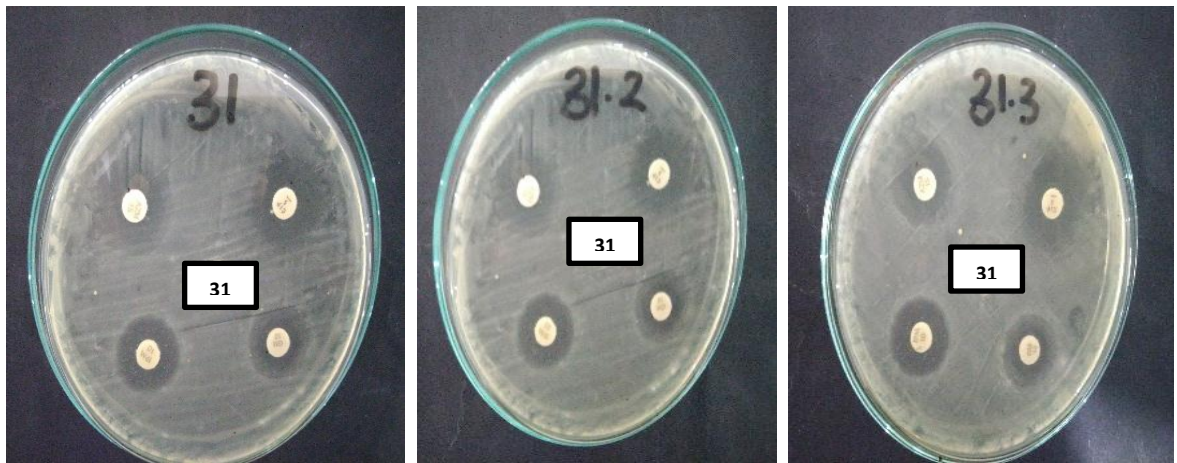
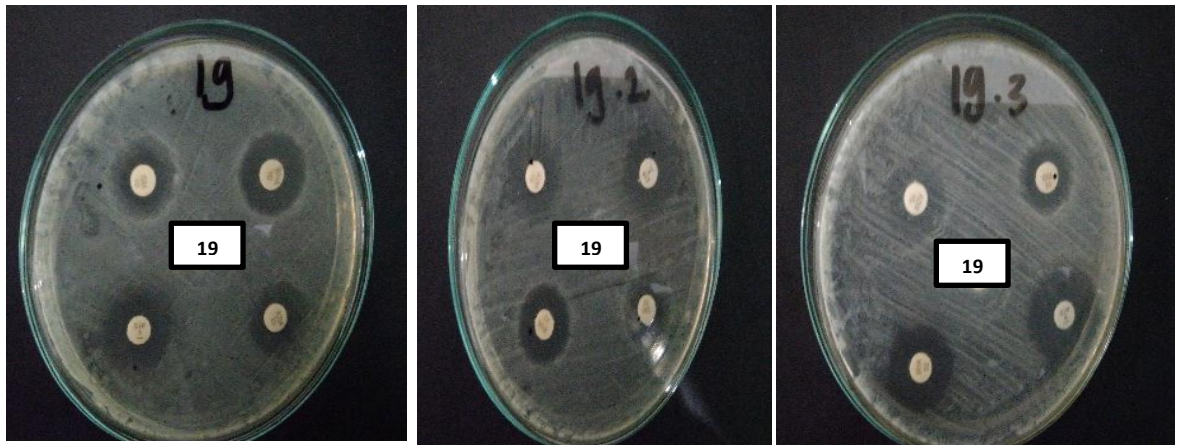


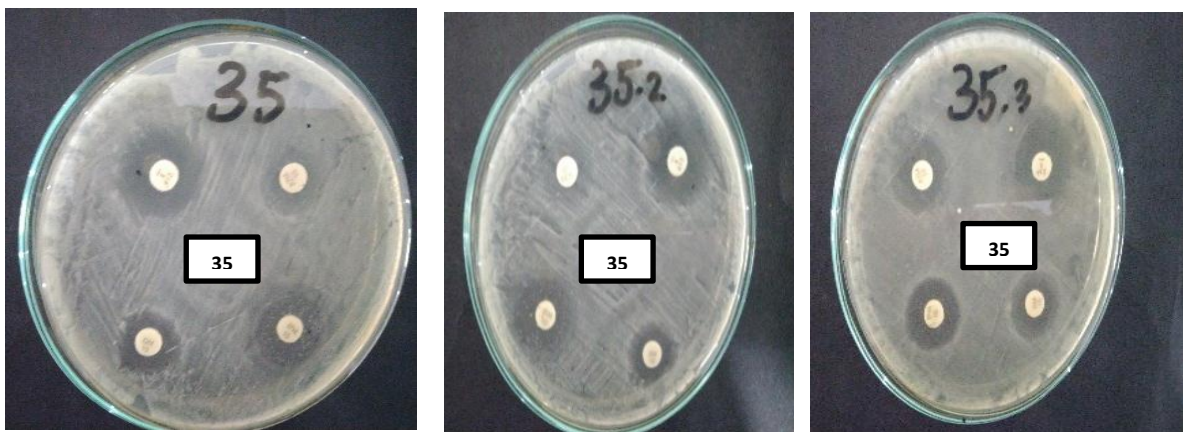
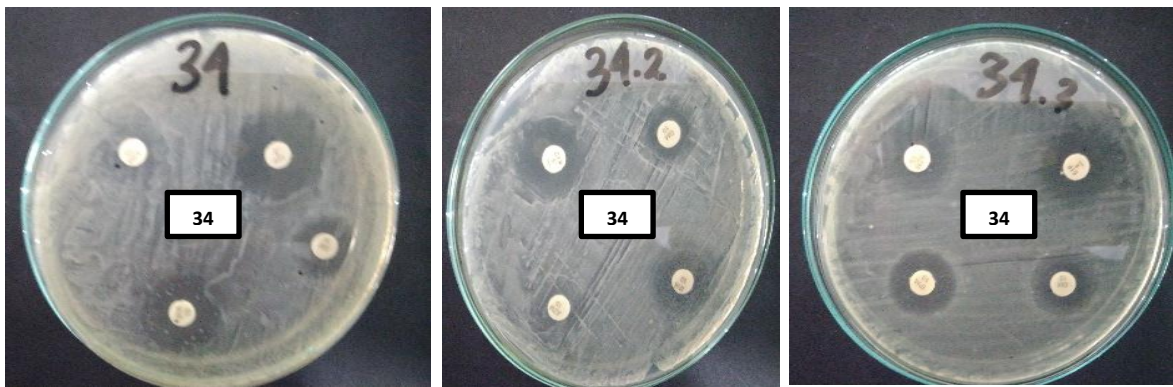
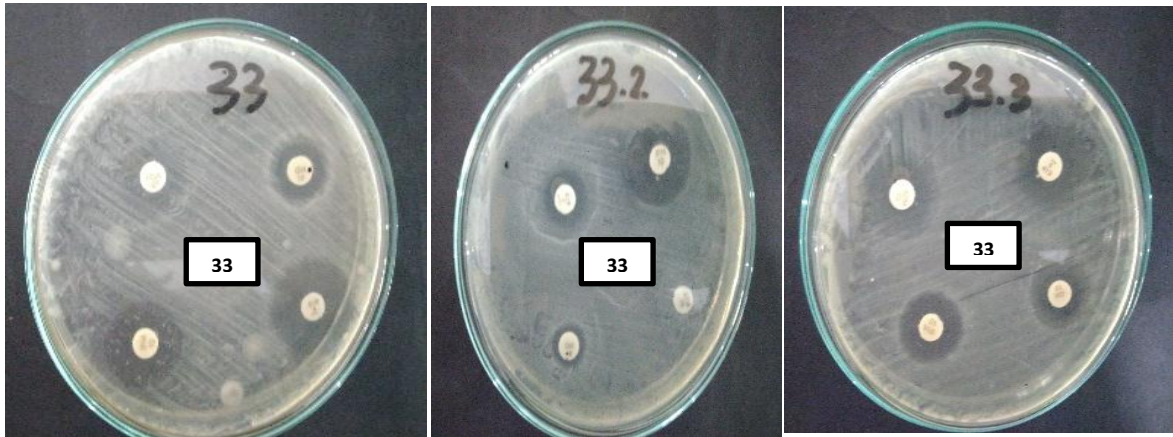


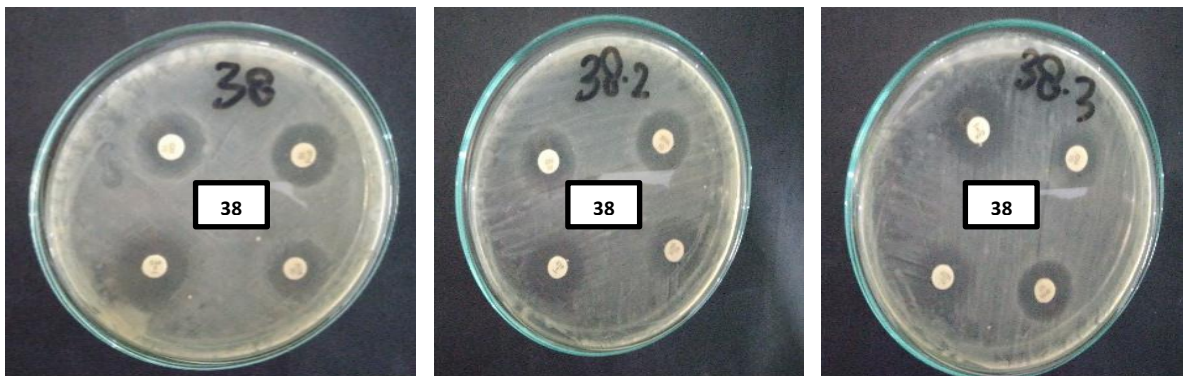
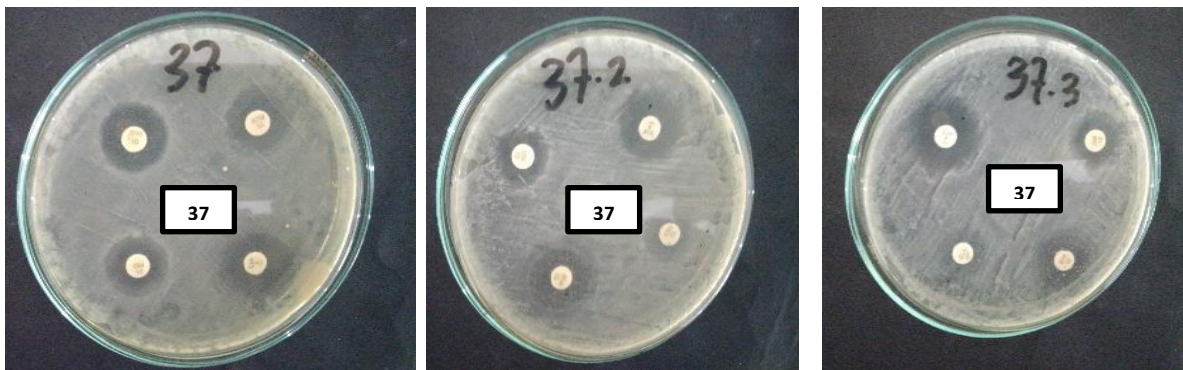
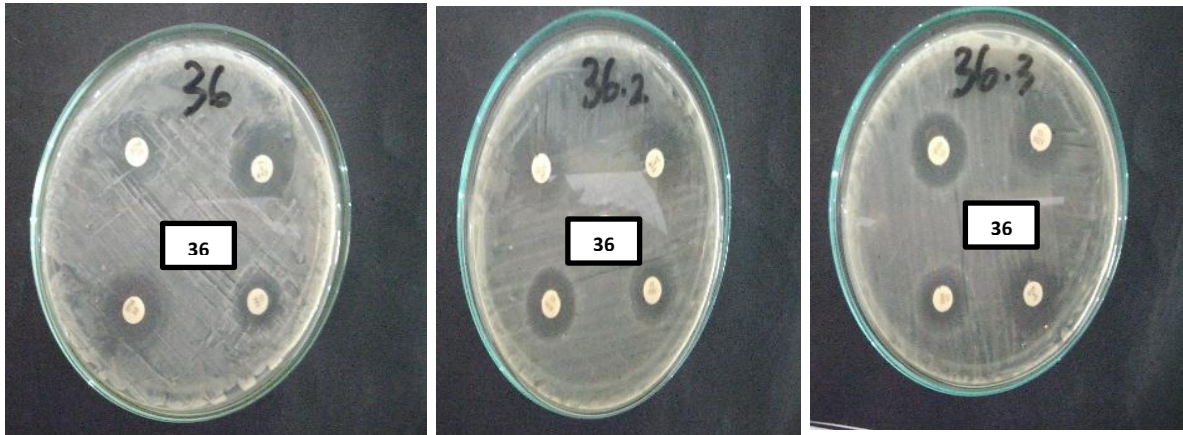


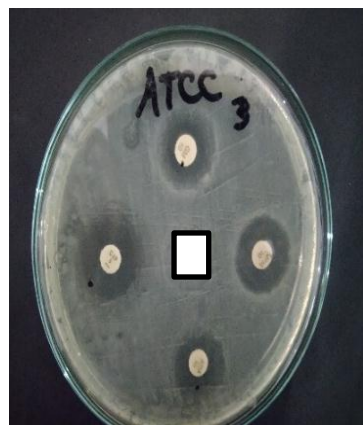
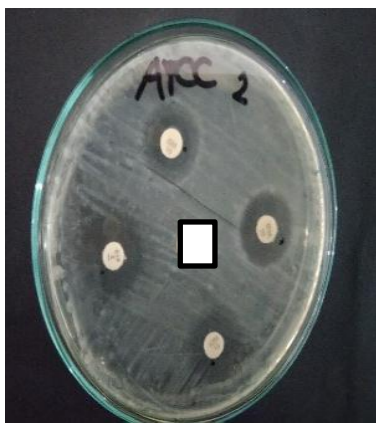
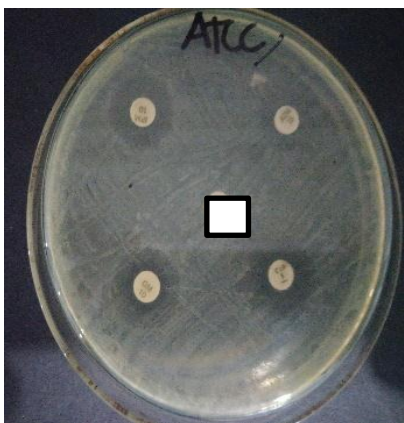
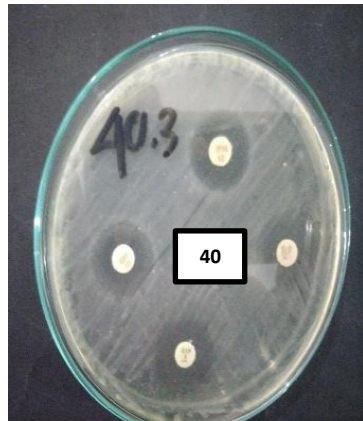
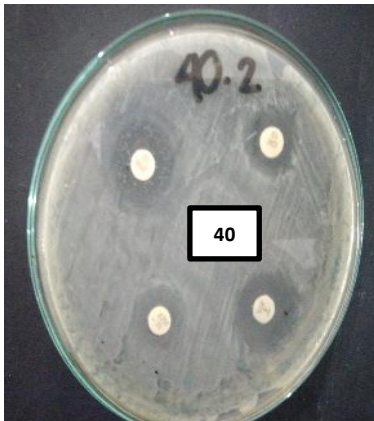
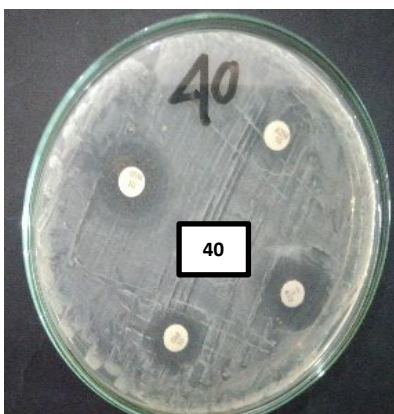
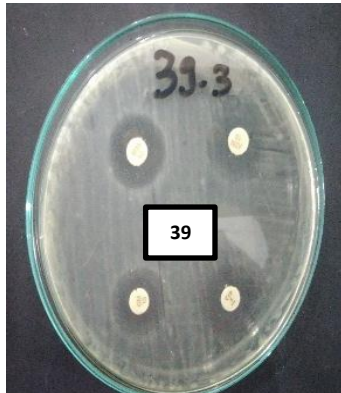
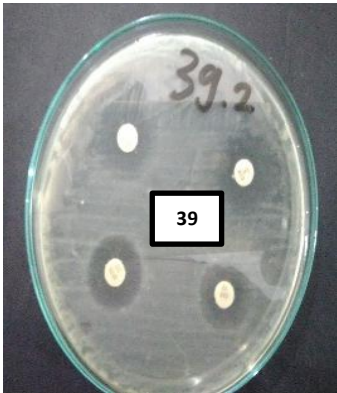
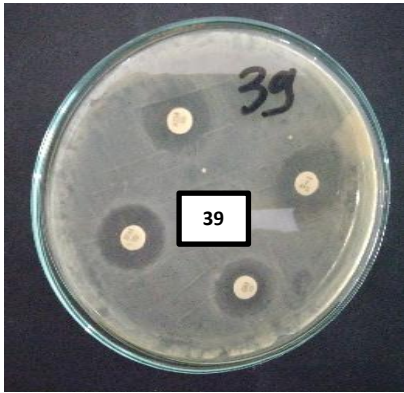












Lampiran 8. Tabel pola sensitivitas antibiotik ciprofloksasin, azitromisin, imipenem, gentamisin, dan meropenem

Diameter zona hambat antibiotik (mm) dan pola sensitivitas antibiotik													
No. Sampel	Repli - kasi	Cip	Rata - rata	P S	Azm	Rata - rata	P S	Imp	Rata - rata	P S	Gm	Rata - rata	P S
1	1	23,3	23,5	S	17,2	17,9	S	23,8	23,8	S	16,1	16,1	S
	2	24,2			18,5			23,7			15,2		
	3	23,1			18,2			23,9			17		
2	1	21,4	21,7	S	17	16,8	S	23	23,2	S	17	15,9	S
	2	21,7			16,5			22,7			15		
	3	22			17,1			23,9			15,9		
3	1	21	21,5	S	17	16,0	S	24,2	23,8	S	14	15,6	S
	2	21,5			15,9			23,7			17,5		
	3	22,2			15,2			23,5			15,5		
4	1	23,1	23,1	S	12	11,5	R	23	23,9	S	15,9	16,3	S
	2	22,8			11,5			24,8			16,8		
	3	23,4			11			23,9			16,3		
5	1	21	21,2	S	11	11,5	R	24	23,4	S	16	17,1	S
	2	21,5			11,5			23			17,6		
	3	21,1			12,1			23,2			17,7		
6	1	22,6	22,2	S	13,1	12,3	R	24,6	24,5	S	14	13,8	I
	2	21,7			12			24			13,1		
	3	22,4			12			25			14,3		
7	1	18,2	16,7	I	12,1	12,0	R	24,5	23,8	S	14,8	14,2	I
	2	16,1			12,3			23,2			14		
	3	16			11,6			23,7			14		
8	1	22	22,2	S	12,7	11,6	R	18,1	17,7	R	16,4	15,5	S
	2	22,6			11			18			15		
	3	22,2			11,3			17			15,2		
9	1	21,5	21,4	S	15,8	14,6	S	24,5	23,7	S	14,7	14,4	I
	2	21,2			14			23			14,2		
	3	21,5			14			23,6			14,3		
10	1	18,5	17,8	I	11,4	11,1	R	23,9	23,6	S	14,8	14,5	I
	2	18			11			23			14		
	3	17			11,1			24			14,7		
11	1	21,1	21,3	S	12,2	11,7	R	24,3	24,1	S	17,2	17,0	S
	2	21,5			12			24			16,9		
	3	21,5			11			24,1			17,1		
12	1	20,2	21,4	S	12	12,0	R	17,4	17,3	R	15	14,3	I
	2	22			12			17,5			14		
	3	22,1			12,2			17			14		
13	1	22,4	21,4	S	12,2	12,0	R	24	23,5	S	17,2	16,6	S
	2	21			12			23,5			16,2		
	3	21			12			23			16,4		
14	1	21,7	21,5	S	14,2	14,7	S	18,3	17,8	R	14	14,3	I
	2	21,3			15			17,1			14		
	3	21,7			15			18,1			15		
15	1	20,6	21,2	S	11	11,6	R	22	22,7	I	15	14,6	I

	2	21			12			23		15		
	3	22			12			23,2		14		
19	1	22,4	22,6	S	14,2	14,0	S	23	23,1	S	17,1	17,1 S
	2	23			14			23,3			17	
	3	22,5			14			23,2			17,2	
31	1	22	22,4	S	11,5	11,2	R	19,3	19,1	R	14,1	14,0 I
	2	23,2			11,1			19			14	
	3	22,1			11,1			19,1			14	
32	1	22,5	21,8	S	12,5	12,2	R	24,1	24,0	S	13,8	14,0 I
	2	21,1			12			24			14	
	3	21,8			12,3			24			14,3	
33	1	23,2	22,7	S	13,1	12,4	R	22,3	23,5	S	16	15,6 S
	2	22,4			12,3			24,2			16	
	3	22,7			12			24			15	
34	1	20,2	20,1	I	12,6	12,5	R	22	20,5	I	14,1	14,1 I
	2	20,1			13			19,5			14	
	3	20			12,1			20			14,2	
35	1	22,7	21,8	S	11	11,6	R	25	24,4	S	15,1	14,7 I
	2	21,4			11,4			24,3			15	
	3	21,4			12,5			24			14,2	
36	1	23,5	23,2	S	14	14,6	S	24	23,7	S	13	13,8 I
	2	23,2			15			23,8			14,4	
	3	22,9			15			23,5			14,1	
37	1	22,5	22,8	S	13,2	12,4	R	25,1	24,6	S	16,7	15,7 S
	2	23			12,1			24,7			15,2	
	3	23,1			12			24,2			15,3	
38	1	21,9	22,1	S	12,9	12,3	R	18	19,0	R	14,8	13,9 I
	2	22,1			12,4			19			13	
	3	22,4			11,7			20,2			14	
39	1	21	21,3	S	13	12,4	R	24,2	24,0	S	14	14,2 I
	2	21,7			12,2			24			14,5	
	3	21,2			12			24			14,1	
40	1	21,5	21,7	S	13,2	12,6	R	24,6	24,1	S	15	15,8 S
	2	22			12,5			23,2			16,8	
	3	21,8			12,1			24,5			15,7	
<i>Klebsi-</i>	1	21,6	21,2	S	12	12,1	R	23,6	23,6	S	16,8	16,4 S
<i>ella</i>	2	21			12,3			24			16,3	
ATCC	3	21			12			23,2			16,1	
10031												

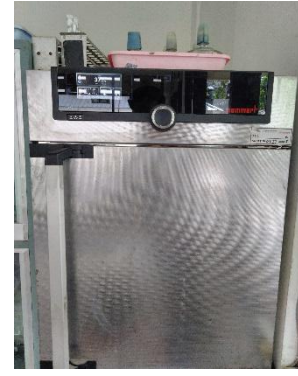
Lampiran 9. Gambar alat



Vortex



LAF



incubator



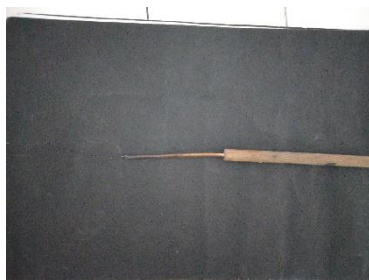
autoclav



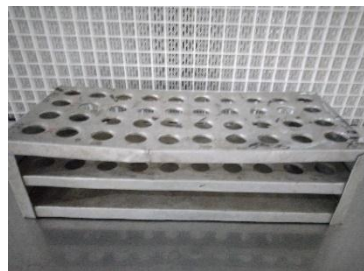
bunsen



pinset



ose



Rak tabung



kompor

Lampiran 10. Formulasi dan pembuatan media

1. Mueller Hinton Agar (MHA)

Komposisi

Beef dehydrated infusion from	300 g
Casein hydrolysate	17,5 g
Starch	1,5 g
Agar	17,0 g
Aquades pH 7,3 ±0,2	ad 100 ml

Bahan-bahan diatas dilarutkan kedalam aquadest ad 1000 ml, dipanaskan sampai larut sempurna, kemudian disterilkan dengan autoklav pada suhu 121°C selama 15 menit dan dituang kedalam cawan petri (Bridson 2006).

2. Media *Mac Conkey*

Komposisi :

Peptone	20 g
Lactose	10 g
Bile salt	5 g
Sodium chloride	5 g
Neutral red	0,075 g
Agar	12 g
Aquades	Ad 1000 ml
pH 7,3 ±0,2	

Bahan-bahan diatas dilarutkan kedalam aquadest ad 1000 ml, dipanaskan sampai larut sempurna, kemudian disterilkan dengan autoklav pada suhu 121°C selama 15 menit dan dituang kedalam cawan petri (Bridson 2006)

3. Brain Heart Infusion (BHI)

Komposisi :

Calf brin infusion solids	12,5 g
Beef heart infusion solids	5 g
Proteose pepton	10 g
Sodium chloride	5 g

Glucose	2 g
Agar	10 g
Disodium Phospate	2,5 g
Aquadest	ad 1000 ml
pH 7,4 ±0,2	

Bahan-bahan diatas dilarutkan kedalam aquadest ad 1000 ml, dipanaskan sampai larut sempurna, kemudian disterilkan dengan autoklav pada suhu 121°C selama 15 menit dan dituang dalam tabung reaksi (Bridson 2006).998).

4. Sulfide Indol Motility (SIM)

Komposisi :

Typtone	20 g
Peptone	6,1 g
Ferrous ammonium sulfat	0,2 g
Sodium thiosulfate	0,2 g
Agar	3,5 g
Aquadest	ad 1000 ml
pH 7,3±0,2	

Bahan-bahan diatas dilarutkan kedalam aquadest ad 1000 ml, dipanaskan sampai larut sempurna, kemudian disterilkan dengan autoklav pada suhu 121°C selama 15 menit dan dituang dalam tabung reaksi (Bridson 2006).

5. Kligler's Iron Agar (KIA)

Komposisi :

Meat extract	3 g
Yeast extract	3 g
Peptone	20 g
Sodium chloride	5 g
Lactose	10 g
Dextrose	1 g

Ferric citrate	0,3 g
Sodium thiosulfate	0,3 g
Phenol red	0,05 g
Agar	12 g
Aquadest	ad 1000 ml
pH 7,4 ±0,2	

Bahan-bahan diatas dilarutkan kedalam aquadest ad 1000 ml, dipanaskan sampai larut sempurna, kemudian disterilkan dengan autoklav pada suhu 121°C selama 15 menit dan dituang dalam tabung reaksi (Bridson 2006).

6. Lysin Iron Agar (LIA)

Komposisi :

Bacteriological peptone	5 g
Yeast extract	3 g
Glucose	1 g
L- lysine	10 g
Ferric ammonium sitrat	0,5 g
Sodium thiosulfate	0,04 g
Bromocrossol purple	0,02 g
Agar	14,5 g
Aquadest	ad 1000 ml
pH 6,7 ± 0,2	

Bahan-bahan diatas dilarutkan kedalam aquadest ad 1000 ml, dipanaskan sampai larut sempurna, kemudian disterilkan dengan autoklav pada suhu 121°C selama 15 menit dan dituang dalam tabung reaksi (Bridson 2006).

7. Citrat Agar

Komposisi :

Magnesium sulfate	0,2 g
Ammonium dyhydrogen phosphate	0,2 g
Sodium ammonium phosphate	0,8 g
Sodium citrate, tribasic	2 g
Sodium chloride	5 g

Bromothymol blue	0,08 g
Agar	15 g
Aquadest	ad 1000 ml
pH 7,0 ±0,2	

Bahan-bahan diatas dilarutkan kedalam aquadest ad 1000 ml, dipanaskan sampai larut sempurna, kemudian disterilkan dengan autoklav pada suhu 121°C selama 15 menit dan dituang dalam tabung reaksi (Bridson 2006).


Lampiran 11. Formularium penyakit pneumonia di RSUD Dr. Moewardi Surakarta

KELAS TERAPI	SUB KELAS TERAPI/NAMA GENERIK/SEDIAAN/KEKUATAN DAN RESTRIKSI PENGGUNAAN	PERESEAPAN MAKSIMAL	NAMA DAGANG /HARGA / PENYEDIA SESUAI EKATALOG PROVINSI JAWA TENGAH 03 MARET 2019
1	susp 240 mg	1 btl/kasus.	GENERIK Cotrimoxazole/ Cotrimoxazole/ Kcotrimoxazol (anak) kombinasi tiap 5 ml suspensi: sulfametoksazol 200 mg + trimetoprim 40 mg (susp. 240 mg)
6.2.2.4 Makrolid			
1 azitromisin			
1	tab 250 mg	3 tab/kasus.	GENERIK Azitromisin/Azithromycin dihidrate tablet/kapsul/kaplet salut selaput 500 mg
2	tab sal selaput 500 mg	3 tab/kasus.	GENERIK Azitromisin/Azithromycin sir kering 200 mg/5 mL
3	si kering 200 mg/5 mL	1 btl/kasus.	GENERIK Azitromisin serb inj 500 mg, kemasan vial/ampul (5)
4	serb inj 500 mg	1 vial/hari selama 3 hari.	GENERIK Azitromisin serb inj 500 mg, kemasan vial/ampul (5)
2 eritromisin			
1	kaps 250 mg	4 kaps/hari selama 10 hari.	GENERIK Eritromisin/ Erythromycin/ Erythromycin stearate tablet/kapsul/kaplet 500 mg
2	tab 500 mg	4 tab/hari selama 10 hari.	GENERIK Eritromisin/ Erythromycin/ Erythromycin stearate tablet/kapsul/kaplet 500 mg
3	sir kering 200 mg/5 mL	2 btl/kasus.	
3 klaritromisin			
1	tab sal selaput 500 mg	20 tab/kasus.	CLARITHROMYCIN Klaritromisin tablet salut selaput 500 mg (5)
2	sir kering 125 mg/5 mL	2 btl/kasus.	COMTRO Klaritromisin sir kering 125 mg/5 mL
3	sir kering 250 mg/5 mL	2 btl/kasus.	ABBOTIC GRANULE 250 MS Klaritromisin sir kering 250 mg/5 mL
4 klindamisin			
1	kaps 150 mg	4 kaps/hari selama 5 hari kecuali untuk toksoplasmosis selama 6 minggu.	GENERIK Clindamycin hydrochloride/ Clindamycin/ Klindamisin tablet/kapsul/kaplet 150 mg

2	kaps 300 mg	4 kaps/hari selama 5 hari kecuali untuk toksoplasmosis selama 6 minggu.	
5 spiramisin			
Dapat digunakan untuk toksoplasmosis pada kehamilan.			
1	tab sal selaput 500 mg	3 g/hari selama 6 minggu.	GENERIK Spiramycin/ Spiramisin tablet/kapsul salut selaput 500 mg
6.2.2.5 Aminoglikosida			
1 amikasin			
Hanya digunakan untuk infeksi oleh bakteri gram negatif yang resisten terhadap gentamisin.			
1	inj 250 mg/mL		GENERIK Amikasin/ Amikasin/ Amikasin sulfate injeksi 250 mg/ml
2 gentamisin			
1	inj 10 mg/mL		GENERIK Gentamisin/ Gentamycin injeksi 40 mg/ ml
2	inj 40 mg/mL		
3 kanamisin			
1	serb inj 1.000 mg		GENERIK Kanamisin/ Kanamycin serb inj 1000 mg
4 streptomisin			
1	serb inj 1.000 mg		GENERIK Streptomycin sulfata/ Streptomycin/ Streptomisin serbuk inj 1000 mg (5)
6.2.2.6 Kuinolon			
1 levofloksasin			
Tidak digunakan untuk pasien usia < 18 tahun dan ibu hamil.			
1	tab sal selaput 500 mg	maks 10 hari.	GENERIK Levofloxacin hemihydrate/ Levofloxacin/ Levofloksasin tablet/kapsul/kaplet salut selaput 500 mg
2	inf 5 mg/mL	maks 10 hari.	GENERIK Levofloxacin hemihydrate/ Levofloxacin/ Levofloksasin inf 5 mg/ml

2 moksisifloksasin			
Tidak digunakan untuk pasien usia < 18 tahun dan ibu hamil.			
1	tab sal selaput 400 mg	10 hari.	MOX/ MED Moxifloxacin hydrochloride (HCl)/ Moxifloxacin/ Moksifloksasin tablet/ kapsul/ salut selaput 400 mg
2	inf 1,6 mg/mL	10 hari.	GENERIK Moxifloxacin hydrochloride (HCl)/ Moxifloxacin/ Moksifloksasin infus 1,6 mg/ml (400mg/250ml)
3 ofloksasin			
Tidak digunakan untuk pasien usia < 18 tahun dan ibu hamil.			
1	tab sal selaput 200 mg	10 hari.	GENERIK Ofloxacin/ Ofloksasin tablet/kapsul salut selaput 200 mg
2	tab sal selaput 400 mg	10 hari.	GENERIK Ofloxacin/ Ofloksasin tablet/kapsul salut selaput 400 mg
4 siprofloksasin			
Tidak digunakan untuk pasien usia < 18 tahun dan ibu hamil.			
1	tab sal selaput 500 mg	4 btl/hari.	GENERIK Ciprofloxacin hydrochloride(HCl)/ Ciprofloxacin Lactate Ciprofloxacin/ Siprofloksasin inf 2 mg/ml
2	inf 2 mg/mL		
6.2.2.7 Lain-Lain			
1 fosfomisin trometamol			
Hanya untuk wanita hamil dengan infeksi saluran kemih (ISK) tanpa komplikasi dan dibuktikan dengan hasil ku			
1	granula 3 g		
2 meropenem			
a) Hanya untuk terapi lini ketiga untuk infeksi oleh kuman penghasil ESBL.			
b) Tidak untuk profilaksis bedah, kecuali bedah jantung.			

Lampiran 12. Surat pengantar rumah sakit


PEMERINTAH PROVINSI JAWA TENGAH
RUMAH SAKIT UMUM DAERAH Dr. MOEWARDI
 Jalan Kolonel Sutarto 132 Surakarta Kode pos 57126 Telp (0271) 634 634,
 Faksimile (0271) 637412 Email : rsmoewardi@jatengprov.go.id
 Website : rsmoewardi.jatengprov.go.id

Surakarta, 26 Agustus 2019

Nomor : **805** / DIK / VIII / 2019
 Lampiran : -
 Perihal : Pengantar Penelitian

Kepada Yth. :
1. Ka. Instalasi Lab. Mikrobiologi & Parasitologi Klinik
2. Ka. Instalasi Farmasi

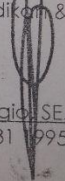
RSUD Dr. Moewardi
 di-
SURAKARTA

Memperhatikan Surat dari Dekan Fak. Farmasi USB Surakarta Nomor : 4.730/A10-4/07.08.2019; perihal Permohonan Ijin Penelitian dan disposisi Direktur tanggal 07 Agustus 2019, maka dengan ini kami menghadapkan siswa:

Nama : Moh. Ghazali Suryadi Winata
NIM : 22164906 A
Institusi : Prodi S.1 Ilmu Farmasi Fak. Farmasi USB Surakarta

Untuk melaksanakan Penelitian dalam rangka pembuatan **Skripsi** dengan judul : "**Pola Sensitivitas Klebsiella sp. Dari Sputum Pasien Pneumonia di RSUD Dr. Moewardi Terhadap Antibiotik Seftriakson Siprofloksasin, Gentamisin Meropenem, dan Imipenem**".

Demikian untuk menjadikan periksa dan atas kerjasamanya diucapkan terima kasih.

Kepala
 Bagian Pendidikan & Penelitian,

Ari Subagio, SE., MM
 NIP. 19660131 199503 1 002

Tembusan Kepada Yth.:
 1. Wadir Umum RSDM (sebagai laporan)
 2. Arsip
RSDM Cepat, Tepat, Nyaman dan Mudah

Lampiran 14. Ethical clearance

8/19/2019 KEPK-RSDM



HEALTH RESEARCH ETHICS COMMITTEE
KOMISI ETIK PENELITIAN KESEHATAN

Dr. Moewardi General Hospital
RSUD Dr. Moewardi

ETHICAL CLEARANCE
KELAIKAN ETIK

Nomor : 997 / VIII / HREC / 2019

The Health Research Ethics Committee Dr. Moewardi
 Komisi Etik Penelitian Kesehatan RSUD Dr. Moewardi

after reviewing the proposal design, herewith to certify
 setelah menilai rancangan penelitian yang diusulkan, dengan ini menyatakan

That the research proposal with topic :
 Bahwa usulan penelitian dengan judul

POLA SENSITIVITAS Klebsiella sp. DARI SPUTUM PASIEN PNEUMONIA DI RSUD Dr. MOEWARDI SURAKARTA TERHADAP ANTIBIOTIK SEFTRIAKSON, SIPROFLOKSASIN, GENTAMISIN, MEROPENEM, IMPENEM

Principal investigator : MOH. GHAZALI SURYADI WINATA
 Peneliti Utama 22164906A

Location of research : Laboratorium mikrobiologi Universitas Setia Budi
 Lokasi Tempat Penelitian

Is ethically approved
 Dinyatakan layak etik

Issued on : 19 Agustus 2019

Chairman
 Ketua



Dr. Wahyu Dwi Atmoko, Sp.F
 19770224 201001 1 004

