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# LAMPIRAN I TABEL LAMPIRAN

**Tabel Lampiran 1. Data penelitian**

Hasil Pemeriksaan Mikroskopis BTA, TB-LAMP dan GenExpert

No	MIKROSKOPIS	GenExpert	TB-LAMP		Keterangan
	Hasil	Hasil	Hasil	Kontrol	
1	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
2	Neg	Not Detected	Neg		
3	3+	RIFRES	Pos		
4	3+	RIFSEN	Pos		
5	Neg	Not Detected	Neg		
6	Neg	RIFSEN	Pos		
7	Neg	Not Detected	Neg		
8	Neg	RIFSEN	Pos		
9	Neg	Not Detected	Neg		
10	3+	RIFRES	Pos		
11	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
12	Neg	Not Detected	Neg		
13	Neg	Not Detected	Neg		
14	Neg	Not Detected	Neg		
15	Neg	Not Detected	Neg		
16	Neg	Not Detected	Neg		
17	Neg	Not Detected	Neg		
18	Neg	RIFSEN	Pos		
19	Neg	Not Detected	Neg		
20	Neg	Not Detected	Neg		Neg : Neg Pos : Pos
21	Neg	RIFSEN	Pos		
22	2+	RIFSEN	Pos		
23	Neg	Not Detected	Neg		
24	Neg	Not Detected	Neg		
25	Neg	Not Detected	Neg		
26	Neg	Not Detected	Neg		
27	Neg	Not Detected	Neg		
28	Neg	Not Detected	Neg		
29	Neg	Not Detected	Neg		
30	Neg	RIFSEN	Pos		

31	Neg	Not Detected	Neg		
32	Neg	Not Detected	Neg		
33	Neg	Not Detected	Neg		
34	Neg	Not Detected	Neg		
35	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
36	Neg	Not Detected	Neg		
37	Neg	Not Detected	Neg		
38	Neg	RIFSEN	Pos		
39	Neg	Not Detected	Neg		
40	1-4 BTA	RIFSEN	Pos		
41	Neg	Not Detected	Neg		
42	Neg	Not Detected	Neg		
43	Neg	Not Detected	Neg		
44	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
45	Neg	Not Detected	Neg		
46	Neg	Not Detected	Neg		
47	Neg	Not Detected	Neg		
48	Neg	Not Detected	Neg		
49	1+	RIFRES	Pos		
50	Neg	Not Detected	Neg		
51	Neg	Not Detected	Neg		
52	Neg	Not Detected	Neg		
53	Neg	Not Detected	Neg		
54	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
55	Neg	Not Detected	Neg		
56	1+	RIFSEN	Pos		
57	Neg	Not Detected	Neg		
58	Neg	RIFSEN	Pos		
59	Neg	Not Detected	Neg		
60	Neg	Not Detected	Neg		
61	Neg	Not Detected	Neg		
62	Neg	Not Detected	Neg		
63	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
64	3+	RIFSEN	Pos		
65	3+	RIFSEN	Pos		
66	Neg	Not Detected	Neg		
67	Neg	Not Detected	Neg		
68	3+	RIFSEN	Pos		

69	Neg	RIFSEN	Pos		
70	Neg	Not Detected	Neg		
71	Neg	Not Detected	Neg		
72	Neg	Not Detected	Neg		
73	Neg	Not Detected	Neg		
74	Neg	Not Detected	Neg		
75	3 BTA	RIFSEN	Pos	Neg : Neg Pos : Pos	
76	Neg	Not Detected	Neg		
77	Neg	Not Detected	Neg		
78	1+	RIFSEN	Pos		
79	Neg	Not Detected	Neg		
80	Neg	Not Detected	Neg		
81	Neg	Not Detected	Neg		
82	2-4 BTA	RIFSEN	Pos		
83	Neg	Not Detected	Neg		
84	Neg	RIFSEN	Pos		
85	Neg	Not Detected	Neg		
86	Neg	Not Detected	Neg		
87	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
88	Neg	Not Detected	Neg		
89	1+	RIFSEN	Pos		
90	Neg	Not Detected	Neg		
91	2+	RIFSEN	Pos		
92	Neg	Not Detected	Neg		
93	Neg	Not Detected	Neg		
94	Neg	Not Detected	Neg		
95	Neg	Not Detected	Neg		
96	Neg	Not Detected	Neg		
97	Neg	Not Detected	Neg		
98	Neg	Not Detected	Neg		
99	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
100	Neg	Not Detected	Neg		
101	Neg	Not Detected	Neg		
102	Neg	Not Detected	Neg		
103	3+	RIFSEN	Pos		
104	Neg	RIFSEN	Pos		
105	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
106	1+	RIFSEN	Pos		

107	Neg	Not Detected	Neg		
108	Neg	Not Detected	Neg		
109	Neg	Not Detected	Neg		
110	Neg	Not Detected	Neg		
111	Neg	Not Detected	Neg		
112	Neg	Not Detected	Neg		
113	Neg	RIFSEN	Pos		
114	Neg	Not Detected	Neg		
115	Neg	Not Detected	Neg		
116	Neg	Not Detected	Neg		
117	Neg	Not Detected	Neg		
118	Neg	Not Detected	Neg		
119	Neg	Not Detected	Neg		
120	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
121	Neg	Not Detected	Neg		
122	Neg	Not Detected	Neg		
123	Neg	Not Detected	Neg		
124	Neg	Not Detected	Neg		
125	2+	RIFSEN	Pos		
126	Neg	Not Detected	Neg		
127	Neg	Not Detected	Neg		
128	Neg	Not Detected	Neg		
129	Neg	Not Detected	Neg		
130	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
131	1+	RIFSEN	Pos		
132	1+	RIFSEN	Pos		
133	Neg	Not Detected	Neg		
134	Neg	Not Detected	Neg		
135	Neg	Not Detected	Neg		
136	Neg	Not Detected	Neg		
137	Neg	Not Detected	Neg		
138	Neg	RIFSEN	Pos		
139	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
140	Neg	Not Detected	Neg		
141	3+	RIFSEN	Pos		
142	Neg	Not Detected	Neg		
143	Neg	Not Detected	Neg		
144	Neg	Not Detected	Neg		

145	Neg	Not Detected	Neg		
146	Neg	Not Detected	Neg		
147	Neg	Not Detected	Neg		
148	Neg	Not Detected	Neg		
149	2+	RIFSEN	Pos		
150	Neg	RIFSEN	Pos		
151	Neg	Not Detected	Neg	Neg : Neg	
152	Neg	Not Detected	Neg	Pos : Pos	
153	Neg	Not Detected	Neg		
154	3+	RIFSEN	Pos		
155	Neg	Not Detected	Neg		
156	Neg	Not Detected	Neg		
157	Neg	Not Detected	Neg		
158	Neg	RIFSEN	Pos		
159	Neg	Not Detected	Neg		
160	Neg	Not Detected	Neg		
161	Neg	Not Detected	Neg		
162	Neg	Not Detected	Neg		
163	Neg	Not Detected	Neg	Neg : Neg	
164	Neg	Not Detected	Neg	Pos : Pos	
165	1+	RIFSEN	Pos		
166	Neg	Not Detected	Neg		
167	Neg	Not Detected	Neg		
168	Neg	Not Detected	Neg		
169	1+	RIFSEN	Pos		
170	Neg	Not Detected	Neg		
171	Neg	Not Detected	Neg		
172	Neg	Not Detected	Neg		
173	Neg	Not Detected	Neg		
174	Neg	Not Detected	Neg	Neg : Neg	
175	2+	RIFSEN	Pos	Pos : Pos	
176	2+	RIFSEN	Pos		
177	Neg	Not Detected	Neg		
178	Neg	Not Detected	Neg		
179	Neg	Not Detected	Neg		
180	Neg	Not Detected	Neg		
181	3+	RIFSEN	Pos	Neg : Neg	
182	Neg	Not Detected	Neg	Pos : Pos	

183	Neg	Not Detected	Neg	
184	1+	RIFSEN	Pos	
185	Neg	Not Detected	Neg	
186	Neg	Not Detected	Neg	
187	Neg	Not Detected	Neg	
188	1+	RIFSEN	Pos	
189	1+	RIFSEN	Pos	
190	Neg	Not Detected	Neg	
191	Neg	Not Detected	Neg	
192	Neg	Not Detected	Neg	
193	Neg	Not Detected	Neg	
194	3+	RIFSEN	Pos	
195	Neg	Not Detected	Neg	
196	Neg	Not Detected	Neg	
197	Neg	Not Detected	Neg	
198	1+	RIFSEN	Pos	
199	3+	RIFSEN	Pos	
200	Neg	Not Detected	Neg	Neg : Neg Pos : Pos
201	3+	RIFSEN	Pos	
202	2+	RIFSEN	Pos	
203	Neg	Not Detected	Neg	
204	Neg	Not Detected	Neg	
205	2+	RIFSEN	Pos	
206	Neg	Not Detected	Neg	
207	Neg	Not Detected	Neg	
208	Neg	Not Detected	Neg	
209	Neg	Not Detected	Neg	
210	Neg	Not Detected	Neg	Neg : Neg Pos : Pos
211	2+	RIFSEN	Pos	
212	Neg	Not Detected	Neg	
213	2+	RIFSEN	Pos	
214	Neg	Not Detected	Neg	
215	Neg	Not Detected	Neg	
216	Neg	Not Detected	Neg	
217	1+	RIFSEN	Pos	Neg : Neg Pos : Pos
218	1+	RIFSEN	Neg	
219	Neg	Not Detected	Neg	
220	Neg	Not Detected	Neg	



221	Neg	Not Detected	Neg		
222	Neg	Not Detected	Neg		
223	Neg	Not Detected	Neg		
224	Neg	Not Detected	Neg		
225	Neg	Not Detected	Neg		
226	3+	RIFSEN	Pos		
227	Neg	Not Detected	Neg		
228	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
229	Neg	Not Detected	Neg		
230	Neg	Not Detected	Neg		
231	Neg	Not Detected	Neg		
232	Neg	Not Detected	Neg		
233	2+	RIFSEN	Pos		
234	Neg	Not Detected	Neg		
235	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
236	3+	RIFRES	Pos		
237	2+	RIFSEN	Pos		
238	Neg	Not Detected	Neg		
239	2+	RIFSEN	Pos		
240	3+	RIFSEN	Pos		
241	Neg	Not Detected	Neg		
242	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
243	Neg	Not Detected	Neg		
244	Neg	Not Detected	Neg		
245	Neg	Not Detected	Neg		
246	3+	RIFSEN	Pos		
247	Neg	Not Detected	Neg		
248	Neg	Not Detected	Neg		
249	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
250	Neg	Not Detected	Neg		
251	Neg	Not Detected	Neg		
252	Neg	Not Detected	Neg		
253	Neg	Not Detected	Neg		
254	2+	RIFSEN	Pos		
255	Neg	Not Detected	Neg		
256	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
257	Neg	Not Detected	Neg		
258	1+	RIFSEN	Pos		

259	Neg	Not Detected	Neg			
260	Neg	Not Detected	Neg			
261	Neg	Not Detected	Neg			
262	Neg	Not Detected	Neg			
263	1+	RIFSEN	Pos			
264	2+	RIFSEN	Pos			
265	Neg	Not Detected	Neg			
266	Neg	Not Detected	Neg			
267	1+	RIFSEN	Pos			
268	Neg	Not Detected	Neg			
269	Neg	Not Detected	Neg			
270	3+	RIFSEN	Pos			
271	Neg	Not Detected	Neg			
272	Neg	Not Detected	Neg			
273	Neg	Not Detected	Neg			
274	Neg	RIFSEN	Pos			
275	Neg	Not Detected	Neg	Neg : Neg Pos : Pos		
276	Neg	Not Detected	Neg			
277	Neg	Not Detected	Neg			
278	2+	RIFSEN	Pos			
279	3+	RIFSEN	Pos			
280	2+	RIFSEN	Pos			
281	Neg	Not Detected	Neg			
282	Neg	Not Detected	Neg			
283	Neg	Not Detected	Neg			
284	Neg	Not Detected	Neg			
285	Neg	Not Detected	Neg	Neg : Neg Pos : Pos		
286	Neg	Not Detected	Neg			
287	3+	RIFSEN	Pos			
288	Neg	Not Detected	Neg			
289	Neg	Not Detected	Neg			
290	Neg	Not Detected	Neg			
291	Neg	Not Detected	Neg			
292	Neg	Not Detected	Neg			
293	2+	RIFSEN	Pos		Neg : Neg Pos : Pos	
294	Neg	Not Detected	Neg			
295	3+	RIFSEN	Pos			
296	Neg	Not Detected	Neg			

297	2+	RIFSEN	Pos		
298	Neg	Not Detected	Neg		
299	Neg	Not Detected	Neg		
300	Neg	Not Detected	Neg		
301	Neg	Not Detected	Neg		
302	Neg	Not Detected	Neg		
303	Neg	Not Detected	Neg		
304	1+	RIFSEN	Pos		
305	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
306	Neg	Not Detected	Neg		
307	Neg	Not Detected	Neg		
308	Neg	Not Detected	Neg		
309	Neg	Not Detected	Neg		
310	1+	RIFSEN	Pos		
311	1+	RIFSEN	Pos		
312	Neg	Not Detected	Neg		
313	Neg	Not Detected	Neg		
314	Neg	Not Detected	Neg		
315	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
316	Neg	Not Detected	Neg		
317	Neg	Not Detected	Neg		
318	Neg	Not Detected	Neg		
319	Neg	Not Detected	Neg		
320	Neg	Not Detected	Neg		
321	Neg	Not Detected	Neg		
322	Neg	Not Detected	Neg		
323	Neg	Not Detected	Neg		
324	Neg	Not Detected	Neg		
325	Neg	Not Detected	Neg		
326	2+	RIFSEN	Pos		
327	Neg	Not Detected	Neg		
328	3+	RIFSEN	Pos		
329	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
330	Neg	Not Detected	Neg		
331	Neg	Not Detected	Neg		
332	Neg	Not Detected	Neg		
333	Neg	Not Detected	Neg		
334	Neg	Not Detected	Neg		

335	3+	RIFSEN	Pos		
336	Neg	Not Detected	Neg		
337	Neg	Not Detected	Neg		
338	Neg	Not Detected	Neg		
339	Neg	Not Detected	Neg		
340	Neg	Not Detected	Neg		
341	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
342	3+	RIFSEN	Pos		
343	Neg	Not Detected	Neg		
344	Neg	Not Detected	Neg		
345	Neg	Not Detected	Neg		
346	Neg	Not Detected	Neg		
347	Neg	Not Detected	Neg		
348	2+	RIFSEN	Pos		
349	Neg	Not Detected	Neg		
350	Neg	Not Detected	Neg		
351	Neg	Not Detected	Neg		
352	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
353	Neg	RIFSEN	Neg		
354	Neg	Not Detected	Neg		
355	Neg	Not Detected	Neg		
356	Neg	Not Detected	Neg		
357	Neg	Not Detected	Neg		
358	Neg	Not Detected	Neg		
359	Neg	Not Detected	Neg		
360	Neg	Not Detected	Neg		
361	Neg	Not Detected	Neg		
362	Neg	Not Detected	Neg		
363	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
364	Neg	Not Detected	Neg		
365	2+	RIFSEN	Pos		
366	Neg	Not Detected	Neg		
367	Neg	Not Detected	Neg		
368	Neg	Not Detected	Neg		
369	Neg	Not Detected	Neg		
370	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
371	Neg	Not Detected	Neg		
372	Neg	Not Detected	Neg		

373	Neg	Not Detected	Neg		
374	Neg	Not Detected	Neg		
375	Neg	Not Detected	Neg		
376	Neg	Not Detected	Neg		
377	Neg	Not Detected	Neg		
378	Neg	Not Detected	Neg		
379	1+	RIFSEN	Pos		
380	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
381	Neg	Not Detected	Neg		
382	Neg	Not Detected	Neg		
383	Neg	Not Detected	Neg		
384	Neg	Not Detected	Neg		
385	Neg	Not Detected	Neg		
386	Neg	Not Detected	Neg		
387	Neg	Not Detected	Neg		
388	Neg	Not Detected	Neg		
389	Neg	Not Detected	Neg		
390	Neg	Not Detected	Neg		
391	Neg	Not Detected	Neg		
392	Neg	Not Detected	Neg		
393	Neg	Not Detected	Neg		
394	Neg	Not Detected	Neg		
395	Neg	Not Detected	Neg		
396	Neg	Not Detected	Neg		
397	Neg	Not Detected	Neg		
398	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
399	Neg	Not Detected	Neg		
400	Neg	Not Detected	Neg		
401	Neg	Not Detected	Neg		
402	Neg	Not Detected	Neg		
403	Neg	Not Detected	Neg		
404	Neg	Not Detected	Neg		
405	Neg	Not Detected	Neg		
406	Neg	Not Detected	Neg		
407	Neg	Not Detected	Neg	Neg : Neg Pos : Pos	
408	Neg	Not Detected	Neg		
409	Neg	Not Detected	Neg		
410	Neg	Not Detected	Neg		

411	Neg	Not Detected	Neg		
412	1+	RIFSEN	Pos		
413	3+	RIFSEN	Pos		
414	Neg	Not Detected	Pos	Neg : Pos Pos : Pos	
415	Neg	Not Detected	Pos		
416	3+	RifSen	Pos		
417	Neg	Not Detected	Pos		
418	Neg	Not Detected	Pos		
419	Neg	Not Detected	Pos		
420	Neg	Not Detected	Pos		
421	1+	RifSen	Pos		
422	Neg	Not Detected	Neg		



## Tabel Lampiran 2. Hasil analisis statistika Mikroskopis BTA dengan GenExpert

### Diagnostic test evaluation calculator

Instructions: enter the number of cases in the diseased group that test positive (a) and negative (b); and the number of cases in the non-diseased group that test positive (c) and negative (d).

#### Disease prevalence

If the sample sizes in the positive (Disease present) and the negative (Disease absent) groups do not reflect the real prevalence of the disease, you can enter the disease prevalence (expressed as a percentage) in the corresponding input box.

Next click the Test button.

Test	Disease Present		Disease Absent		Total
	n	n	n	n	
Positive	True Positive a=73	False Positive c=0			a + c = 73
Negative	False Negative b=16	True Negative d=324			b + d = 340
Total	a + b = 89		c + d = 324		

Disease prevalence

If the ratio of cases in the Disease Present and Disease Absent groups does not reflect the disease prevalence, enter:

disease prevalence (%):

### Results

Statistic	Value	95% CI
Sensitivity	82.02%	72.45% to 89.36%
Specificity	100.00%	98.87% to 100.00%
Positive Likelihood Ratio		
Negative Likelihood Ratio	0.18	0.12 to 0.28
Disease prevalence (*)	21.55%	17.68% to 25.83%
Positive Predictive Value (*)	100.00%	
Negative Predictive Value (*)	95.29%	92.85% to 96.93%
Accuracy (*)	96.13%	93.78% to 97.77%

### Tabel Lampiran 3. Hasil analisis statistika Uji Diagnostik TB-LAMP dengan GenExpert

#### Diagnostic test evaluation calculator

Instructions: enter the number of cases in the diseased group that test positive (a) and negative (b); and the number of cases in the non-diseased group that test positive (c) and negative (d).

#### Disease prevalence

If the sample sizes in the positive (Disease present) and the negative (Disease absent) groups do not reflect the real prevalence of the disease, you can enter the disease prevalence (expressed as a percentage) in the corresponding input box.

Next click the Test button.

Test	Disease		n	Absent	n	Total
	Present					
<b>Positive</b>	True Positive	a=87		False Positive	c=0	a + c = 87
<b>Negative</b>	False Negative	b=2		True Negative	d=324	b + d = 326
<b>Total</b>		a + b = 89			c + d = 324	

**Disease prevalence**

If the ratio of cases in the Disease Present and Disease Absent groups does not reflect the disease prevalence, enter:

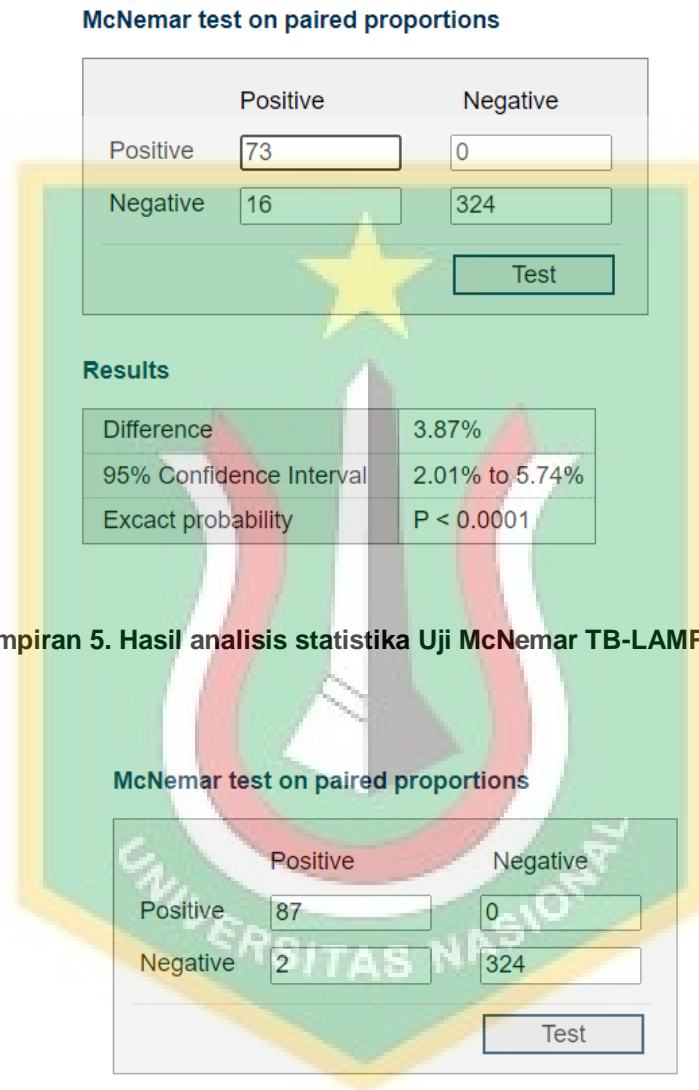
disease prevalence (%):

#### Results

Statistic	Value	95% CI
Sensitivity	97.75%	92.12% to 99.73%
Specificity	100.00%	98.87% to 100.00%
Positive Likelihood Ratio		
Negative Likelihood Ratio	0.02	0.01 to 0.09
Disease prevalence (*)	21.55%	17.68% to 25.83%
Positive Predictive Value (*)	100.00%	
Negative Predictive Value (*)	99.39%	97.63% to 99.84%
Accuracy (*)	99.52%	98.26% to 99.94%



Tabel Lampiran 4. Hasil analisis statistika Uji McNemar mikroskopis BTA dengan GenExpert



Tabel Lampiran 5. Hasil analisis statistika Uji McNemar TB-LAMP dengan GenExpert

## LAMPIRAN

### A. Cara kerja pemeriksaan mikroskopis BTA

- Prinsip: *Mycobacterium tuberculosis* mempunyai lapisan dinding lipid (*mycolic acid*) yang tahan terhadap asam. Proses pemanasan mempermudah masuknya karbol fuchsin ke dalam dinding sel. Dinding sel tetap mengikat zat warna karbol fuchsin walaupun didekolorisasi dengan asam alkohol.
- Alat dan bahan:
  - Sputum
  - Kaca sediaan *frosted end*
  - Bambu lidi yang ujungnya dipipihkan
  - Tusuk gigi
  - Lampu spiritus/Bunsen
  - Pensil 2B
  - Wadah limbah yang diisi dengan disinfektan
  - Masker
  - Sarung tangan
  - Rak pewarnaan
  - Air mengalir/botol semprot
  - *Timer*
  - Reagensia *Ziehl Neelsen* (karbol fuchsin 1%, asam alkohol 3% dan *methylene blue* 0,1%)
- Prosedur kerja:
  - Ambil spesimen dahak pada bagian yang purulen (kental berwarna kuning kehijauan) dengan lidi yang telah dipipihkan ujungnya.
  - Sebarkan diatas kaca sediaan dengan bentuk oval ukuran 2x3 cm kemudian ratakan dengan tusuk gigi membentuk spiral kecil-kecil, sediaan siap difiksasi.



- Dengan pinset sediaan kaca dijepit dan fiksasi 2-3 kali melewati api Bunsen (pastikan apusan menghadap ke atas)
- Letakkan sediaan diatas rak dengan jarak  $\pm 1$  jari ( $\pm 2$  sampai 3cm).
- Sediaan ditetesi larutan karbol fuchsin 1% hingga menutupi seluruh permukaan kaca sediaan.
- Panaskan sediaan sampai keluar uap (jangan sampai mendidih), diamkan selama minimal 10 menit.
- Bilas sediaan secara perlahan dengan air mengalir, jangan menyiramkan atau menyembrotkan air tepat pada apusan.
- Tuangkan asam alkohol 3% pada sediaan biarkan selama 3 menit lalu bilas dengan air sampai bersih, tidak tampak sisa zat warna merah.
- Tuangkan *methylene blue* 0,1% hingga menutupi seluruh sediaan dan biarkan selama 1 menit.
- Bilas dengan air mengalir. Keringkan sediaan pada rak pengering, sediaan siap dibaca.
- Baca sediaan mulai dari ujung kiri ke ujung kanan minimal 100 lapang pandang, pada garis horizontal terpanjang menggunakan mikroskop dengan perbesaran 100x dengan minyak imersi.
- Hitung jumlah BTA yang ditemukan dari ujung kiri ke ujung kanan (garis horizontal terpanjang)
- Lalu interpretasikan hasil berdasarkan skala IUATLD.

- Interpretasi hasil:

Negatif : Tidak ditemukan BTA dalam 100 LPB

Scanty : 1-9 BTA dalam 100 LPB (tuliskan jumlah BTA yang ditemukan)

1+ : 10 – 99 BTA dalam 100 LPB

2+ : 1 – 10 BTA setiap 1 LPB (periksa minimal 50 LPB)

3+ :  $\geq 10$  BTA setiap 1 LPB (periksa minimal 20 LPB)

## B. Cara kerja pemeriksaan TB-LAMP

- Prinsip: Teknik real-time PCR dengan pembacaan fluoresensi
- Alat dan bahan:
  - HumaLoop T (*heating block, reaction block, lampu UV*)
  - Humax ITA
  - Spidol permanen
  - Alat pelindung diri (masker, sarung tangan, jas lab)
  - Mikropipet
  - Tip kuning
  - *Loopamp<sup>TM</sup> Pure DNA Extraction Kit (heating tube, adsorbent tube, reaction tube)*
- Prosedur kerja
  - Beri label tutup *heating tube*.
  - Pipet 60µL sampel dahak, kemudian masukkan ke dalam *heating tube*.
  - Pipet 60µL NC ke dalam *heating tube*.
  - Homogenkan *heating tube* sebanyak 3-5 kali.
  - Masukkan *heating tube* ke dalam *heating block* yang suhunya 95<sup>0</sup>C dan tutup. Tekan tombol *Start/Stop*, untuk memulai inkubasi selama 5 menit.
  - Keluarkan *heating tube* segera setelah inkubasi selesai. Biarkan dingin selama 2 menit, lalu homogenkan lagi sebanyak 3-5 kali.
  - Hubungkan *heating tube* dengan *adsorben tube* dengan cara disekrup untuk melepaskan larutan ke dalam *adsorben tube*. Homogenkan hingga serbuk tercampur rata.
  - Siapkan *reaction tube* sejumlah sampel yang direaksikan ditambah untuk kontrol positif ke dalam tempat *reaction tube*.
  - Peras *adsorben tube* dan keluarkan 30µL DNA langsung ke dalam *reaction tube*.
  - Pipet 30µL kontrol positif ke dalam *reaction tube*.
  - Masukkan *reaction tube* ke dalam *reaction block* yang suhunya sudah mencapai 67<sup>0</sup>C. Tekan tombol *Start/Stop*. Seluruh amplifikasi membutuhkan waktu 45 menit termasuk inaktivasi enzim pada suhu 80<sup>0</sup>C selama 5 menit.

- Keluarkan *tube reaction* dari *reaction block* dan masukkan ke dalam unit deteksi fluoresensi. Nyalakan lampu UV.
- Baca hasil pemeriksaan menggunakan lampu UV.

- Interpretasi hasil:

PC: fluoresensi hijau; lebih terang dari NC

NC: tidak ada fluoresensi

Positif: fluoresensi hijau

Negatif: tidak ada fluoresensi

### C. Cara kerja pemeriksaan GenExpert

- Prinsip: metode deteksi molekuler berbasis *nested real-time* PCR menggunakan sistem otomatis yang mengintegrasikan proses purifikasi spesimen, amplifikasi asam nukleat, dan deteksi sekuen target.
- Alat dan bahan:
  - Alat TCM
  - Komputer atau laptop, yang telah berisi program GX Dx
  - *Barcode scanner*
  - Alat pelindung diri (jas lab, masker, sarung tangan)
  - *Timer*
  - Label dan spidol
  - Kit TCM MTB/RIF (*Sample Reagent, katridge TCM MTB/RIF*)
- Prosedur kerja:
  - Beri label identitas pada setiap katrid. Identitas spesimen dapat ditempel atau ditulis pada bagian sisi katrid. JANGAN memberikan label pada bagian *barcode*.
  - Bukalah penutup pot dahak, tambahkan *Sample Reagent* yang sudah tersedia sebanyak 2 kali volume spesimen.

- Tutup kembali pot dahak, kemudian kocok dengan kuat sampai campuran dahak dan *Sample Reagent* menjadi homogen. Diamkan selama 10 menit pada suhu ruang.
  - Kocok kembali campuran, lalu diamkan selama 5 menit. Bila masih ada gumpalan, kocok kembali agar campuran dahak dan *Sample Reagent* menjadi homogen sempurna dan biarkan selama 5 menit pada suhu kamar.
  - Buka penutup katrid, gunakan pipet yang disediakan untuk memindahkan spesimen dahak yang telah diolah sebanyak 2 ml (sampai garis batas pada pipet) ke dalam katrid secara perlahan-lahan untuk mencegah terjadinya gelembung yang bisa menyebabkan *error*.
  - Tutup katrid secara perlahan dan masukan katrid ke dalam alat TCM.
  - Pastikan komputer dan alat TCM telah menyala serta telah menjalankan program GeneXpert Dx.
  - Pindai *barcode* katrid menggunakan *barcode scanner* dengan cara menekan tombol warna kuning pada *barcode scanner*, masukkan identitas pasien, kemudian klik “*Start Test*”. Buka pintu modul dan letakkan katrid TCM.
  - Tutup pintu modul dengan sempurna hingga terdengar bunyi klik. Pemeriksaan akan dimulai dan lampu hijau akan tetap menyala tanpa berkedip. Pemeriksaan akan berlangsung kurang lebih 2 jam. Saat pemeriksaan selesai, lampu akan mati secara otomatis dan pintu modul akan terbuka secara otomatis.
- Interpretasi hasil:
    - MTB Not Detected: Tidak ditemukan DNA MTB
    - MTB Detected; Rif Resistance Not Detected: DNA MTB terdeteksi, Mutasi gen *rpoB* tidak terdeteksi. Kemungkinan besar sensitif terhadap rifampisin
    - MTB Detected; Rif Resistance Detected: DNA MTB terdeteksi, mutasi gen *rpoB* terdeteksi, kemungkinan besar resistan terhadap rifampisin.

Invalid: Keberadaan DNA MTB tidak dapat ditentukan karena kurva SPC tidak menunjukkan kenaikan jumlah amplikon, proses sampel tidak benar, reaksi PCR terhambat.

Error: Keberadaan DNA MTB tidak dapat ditentukan, *quality control internal* gagal atau terjadi kegagalan sistem.

No Result: Keberadaan DNA MTB tidak dapat ditentukan karena data reaksi PCR tidak mencukupi.





# UNIVERSITAS NASIONAL FAKULTAS BIOLOGI

## Akreditasi A

( Keputusan BAN No. 2000/SK/BAN-PT/Akred/S/VI/2017 Departemen Pendidikan Nasional )  
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Nomor : 55/DEK.BIO/1.4.5/I/2023  
Hal : Permohonan Izin Pengambilan Data

Kepada Yth,  
Direktur P2PM, Ditjen. P2P Kementerian Kesehatan RI  
c.q Tim Kerja TBC dan ISPA  
Di Tempat

Dengan Hormat

Bersama ini kami sampaikan bahwa untuk memenuhi salah satu syarat guna mendapatkan gelar sarjana (S1) pada Fakultas – Biologi Universitas Nasional Jakarta, setiap mahasiswa diwajibkan untuk melakukan penelitian dalam rangka penulisan Skripsi Sarjana (S1).  
Sehubungan dengan hal tersebut di atas bersama ini kami mohon bantuan Bapak/Ibu untuk dapat mengizinkan mahasiswa kami tersebut di bawah ini :

Nama : Tri Margianti  
No. Pokok : 216201446044  
Judul : PERBANDINGAN HASIL PEMERIKSAAN  
METODE MIKROSKOPIS BTA, TB-LAMP  
DAN TES CEPAT MOLEKULER  
GENEXPERT UNTUK DIAGNOSIS  
Mycobacterium tuberculosis PADA PASIEN  
TERDUGA TB  
No. Telp : 085719017730

Untuk dapat mengambil data sekunder hasil pemeriksaan Mikroskopis BTA, TB-LAMP dan tes cepat molekuler genexpert untuk diagnosis mycobacterium tuberculosis pada pasien terduga TB.

Demikian kami sampaikan dan atas perhatian serta kebijakan yang diberikan, kami ucapkan terima kasih.

Jakarta, 26 Januari 2023

Dekan

Dr. Tatang-Mitra Setia, M.Si







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Hal : Surat Tanggapan Permohonan Izin Pengambilan Data

27 Februari 2023

Yth. Dekan Fakultas Biologi Universitas Nasional  
Jalan Sawo Manila No.61 Pasar Minggu  
Jakarta Selatan 12520

Berdasarkan surat Saudara No.55/DEK.BIO/1.4.5/II/2023 tanggal 26 Januari 2023 tentang Permohonan Izin Pengambilan Data, bersama ini kami sampaikan bahwa permohonan pengambilan data sekunder dalam rangka penulisan Skripsi Sarjana (S1) Mahasiswa a.n. Tri Margianti dapat kami setujui dengan ketentuan sebagai berikut:

1. Data sekunder yang diminta adalah data hasil pemeriksaan mikroskopis BTA, TB-LAMP dan Tes Cepat Molekuler (TCM) GeneXpert untuk diagnosis terduga TBC yang digunakan untuk keperluan penulisan Skripsi Sarjana (S1).
2. Data yang telah dianalisis agar dapat disusun dalam bentuk laporan resmi, kemudian dikirimkan ke Tim Kerja TBC Kementerian Kesehatan RI.
3. Tim Kerja TBC Kementerian Kesehatan RI agar dapat dimasukkan dalam *Acknowledgement* pada laporan Skripsi Sarjana (S1) mahasiswa terkait.
4. Data hasil analisis yang akan dipublikasikan mohon dapat diinformasikan dan dikoordinasikan terlebih dahulu dengan Tim Kerja TBC Kementerian Kesehatan RI.

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Atas perhatian dan kerja sama Saudara, kami sampaikan terima kasih.

Direktur Pencegahan dan Pengendalian  
Penyakit Menular,



**dr. Imran Pambudi, MPH**

Tembusan:  
Direktur Jenderal Pencegahan dan Pengendalian Penyakit

# PERBANDINGAN HASIL PEMERIKSAAN METODE MIKROSKOPIS BTA, TB-LAMP DAN TES CEPAT MOLEKULER GENEXPERT UNTUK DIAGNOSIS Mycobacterium tuberculosis PADA PASIEN TERDUGA TB

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