

Effect of PICO on Growth Inhibition of Microorganisms

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Material & Methods

Bacteria strains for test were 79 stains collected from many species of animals as

1. Salmonella spp. 29 strains
2. Vibrio spp. 14 strains
3. Escherichia coli 11 strains
4. Bacteria in genus Enterobacteriaceae 13 strains as
 - Proteus spp.
 - Enterobacter spp.
 - Klebsiella spp.
5. Bacteria in Non – Enterobacteriaceae 12 strains as
 - Pseudomonas spp.
 - Pasteurella spp.
 - Aeromonas spp.

All bacteria strains collected and kept in Stock Agar at room temperature, take bacteria cell from stock culture to incubated in Tryptic Soy Agar (TSA-Difco) except

- Pasteurella spp. incubated n TSA mix with 5% lamp blood.
- Vibrio spp. incubated in special agar (Thiosulphite Citrate Bile Sucrose Agar (TCBS) before and then incubated in TSA mix with 1% NaCl, After that take all bacteria to incubated in 37^oc 18-20 hours for experiment later.

Interval Period : 15, 30 , 60 and 90 minutes

- Method**
1. Prepare PICO from stock solution by dilute PICO 1 gram in 250, 500, 1000 cc. distilled water respectively
 2. Prepare above bacteria for test by take 2-3 colonies of each bacteria strain incubated in Brain Heart Infusion Medium (BHI- Difco) 10 ml but only Vibrio spp. inoculated in BHI mix with 1% NaCl at 37^oc 18-20 hours.

This experiment are modified from the qualitative suspension of the German Society for Hygiene and Microbiology (Reybrouck, 1975) by sucked PICO solution was prepared from article. 1 and stock culture prepare from article 2 at 0.5 ml each put in 0.85% NaCl 4 ml, let PICO solution contact microorganisms at room temperature for 15, 30, 60 and 90 minutes, then sucked that mixture on each period, each microorganisms strain each PICO concentration spread on Tryptic Soy Broth (TSB) 10 ml about 5 testubes per 0.5 ml each, but Vibrio.spp. have to use TSB + 1% NaCl for experiment and incubated at 37^oc for 18-20 hours collected data by microorganisms are growth or not from the turbidity of TSB medium.

This experiment compare with control groups for checking result of PICO residue in inoculums by sucked PICO 0.5 ml in each concentration add in TSB 9 ml and

TSB + 1% NaCl for *Vibrio* spp. for 5 testtubes (for each concentration each testtubes add 0.1 ml and mix well then add microorganism from stock culture in all 5 testtubes each 1 ml and then incubated at 37^oc for 18-20 hours, The microorganisms must growth every testtubes, if not growth, have to repeat again.

Result Effect of **PICO** on Growth Inhibition

TABLE 1	PICO against <i>Salmonella</i> spp. (29 Strains)				
DILUTION	Contacting Time (minutes)				
	15	30	60	90	>90
1 : 250	14 (48%)	24 (83%)	29 (100%)		
1 : 500	5 (4.17%)	15 (52%)	22 (76%)	27 (93%)	29 (100%)
1 : 1000	2 (7%)	7 (24%)	17 (59%)	24 (83%)	29 (100%)

TABLE 2	PICO against <i>Vibrio</i> spp. (14 Strains)				
DILUTION	Contacting Time (minutes)				
	15	30	60	90	>90
1 : 250	14 (100%)				
1 : 500	14 (100%)				
1 : 1000	14 (100%)				

TABLE 3	PICO against E. coli (11 Strains)				
DILUTION	Contacting Time (minutes)				
	15	30	60	90	>90
1 : 250	3 (27%)	7 (64%)	10 (91%)	11 (100%)	
1 : 500	1 (9%)	2 (18%)	6 (54%)	10 (91%)	11 (100%)
1 : 1000	1 (9%)	1 (9%)	3 (27%)	7 (64%)	11 (100%)

TABLE 4	PICO against Enterobacteriaceae spp.¹ (13 Strains)				
DILUTION	Contacting Time (minutes)				
	15	30	60	90	>90
1 : 250	6 (46%)	9 (69%)	11 (84%)	13 (100%)	
1 : 500	4 (31%)	6 (46%)	9 (69%)	12 (92%)	13 (100%)
1 : 1000	2 (15%)	5 (38%)	8 (62%)	11 (84%)	13 (100%)

Note: 1 = Proteus sp., enterobacter sp., klebsiella sp.

TABLE 5	PICO against Non- Enterobacteriaceae spp¹ (12 Strains)				
DILUTION	Contacting Time (minutes)				
	15	30	60	90	>90
1 : 250	10 (83%)	11 (92%)	12 (100%)		
1 : 500	7 (58%)	9 (75%)	11 (92%)	12 (100%)	
1 : 1000	6 (50%)	7 (58%)	9 (75%)	11 (92%)	12 (100%)

Note: 1 = Pseudomonas spp., Pasteurella spp., Aeromonas spp.