CHAPTER FOUR

4. RESULTS

Out of two hundred swabs from mobile phones of students in some universities in Khartoum State were collected (Table 1). Only 34(17%) gave bacterial growth (Table 2). Of which 8 were Gram-ve bacilli and 26 were Gram +ve cocci (Table 3). The load of bacterial contamination was expressed in term of colony forming unit per ml (CFU/ml). The results revealed that the CFU/ml was as follows; In Sudan University of Science and Technology 4.57×10^7 CFU/ml, Al-Mughtaribeen University 4.60×10^5 CFU/ml, National Ribat University 2.95×10^8 CFU/ml and Al-Zaiem Al-Azhari University 7.79×10^7 CFU/ml. The average of bacterial count in different universities was 11.78×10^7 CFU/ml (Table 4).

Table 1. Distribution and percentage of specimens taken from mobile phones according to the university

University	Specimen No.	%
Sudan University of Science and Technology	40	20
University of Khartoum	18	9
Al-Nilain University	24	12
University of Bahri	20	10
Al-Mughtaribeen University	18	9
National Ribat University	15	7.5
International University of Africa	16	8
Al-Zaiem Al-Azhari University	20	10
University of Science and Technology	10	5
Omdurman Islamic University	10	5
University of Holy Quran and Islamic Sciences	9	4.5
Total	200	100

Table 2. Number and percentage of bacterial growth obtained from mobile phones according to the university

University	Growth No. / %
Sudan University of Science and Technology	7 (3.5)
University of Khartoum	0 (0)
Al-Nilain University	0 (0)
University of Bahri	0 (0)
Al-Mughtaribeen University	2 (1)
National Ribat University	8 (4)
International University of Africa	0 (0)
Al-Zaiem Al-Azhari University	17 (8.5)
University of Science and Technology	0 (0)
Omdurman Islamic University	0 (0)
University of Holy Quran and Islamic Sciences	0 (0)
Total	34 (17)

Table 3. Frequency and percentage of Gram –ve rods and Gram +ve cocci identify during this study

Organism	Frequency	%
Gram –ve rods	8	23.5
Gram +ve cocci	26	76.5
Total	34	100

Table 4. Bacterial load on mobile phones of students according to universities

University	Bacterial load CFU/ml
Sudan University of Science and Technology	4.57×10^7
Al-Mughtaribeen University	4.60×10^5
National Ribat University	2.95×10^8
Al-Zaiem Al-Azhari University	7.79×10^7
Total average of bacterial count	11.78×10^7

Table 5. Fermentation pattern of Gram-ve bacteria on MacConkey's agar

No. of isolates	Fermentation	
	LF	NLF
8	**1**	7

Key: LF = Lactose Fermenter

NLF = Non Lactose Fermenter

Table 6. Biochemical tests of Gram –ve bacteria

Isolated code	University	Oxidase	KIA				Indol	Urease	Citrate	Organism
			B	S	G	H_2S				
1	SUST	-	Y	Y	+	-	-	+	+	*K. pneumonae*
2		+	R	R	-	-	-	-	+	*Ps. aeruginosa*
3	National Ribat University	+	R	R	-	-	-	-	+	*Ps. aeruginosa*
4		+	R	R	-	-	-	-	+	*Ps. aeruginosa*
5		+	R	R	-	-	-	-	+	*Ps. aeruginosa*
6		+	R	R	-	-	-	+	+	*Ps. aeruginosa*
7		+	R	R	-	-	-	+	+	*Ps. aeruginosa*
8		-	Y	R	-	-	+	-	-	*P. stuartii*

Key: KIA= Kliglar's Iron Agar medium; B=Butt; S=Slope; G=Gas production; H_2S=hydrogen sulfide production; (+) = positive; (-) = negative

Table 7. Percentage probability of organisms using Microbact™ 24E Gram-negative identification system provided by Microbact 2000 software program

Label	University	Organism	Probability (%)
3R	National Ribat University	*Ps. aeruginosa*	96.50
4R		*Ps. aeruginosa*	92.81
5R		*Ps. aeruginosa*	97.71
6R		*P. stuartii*	66.41

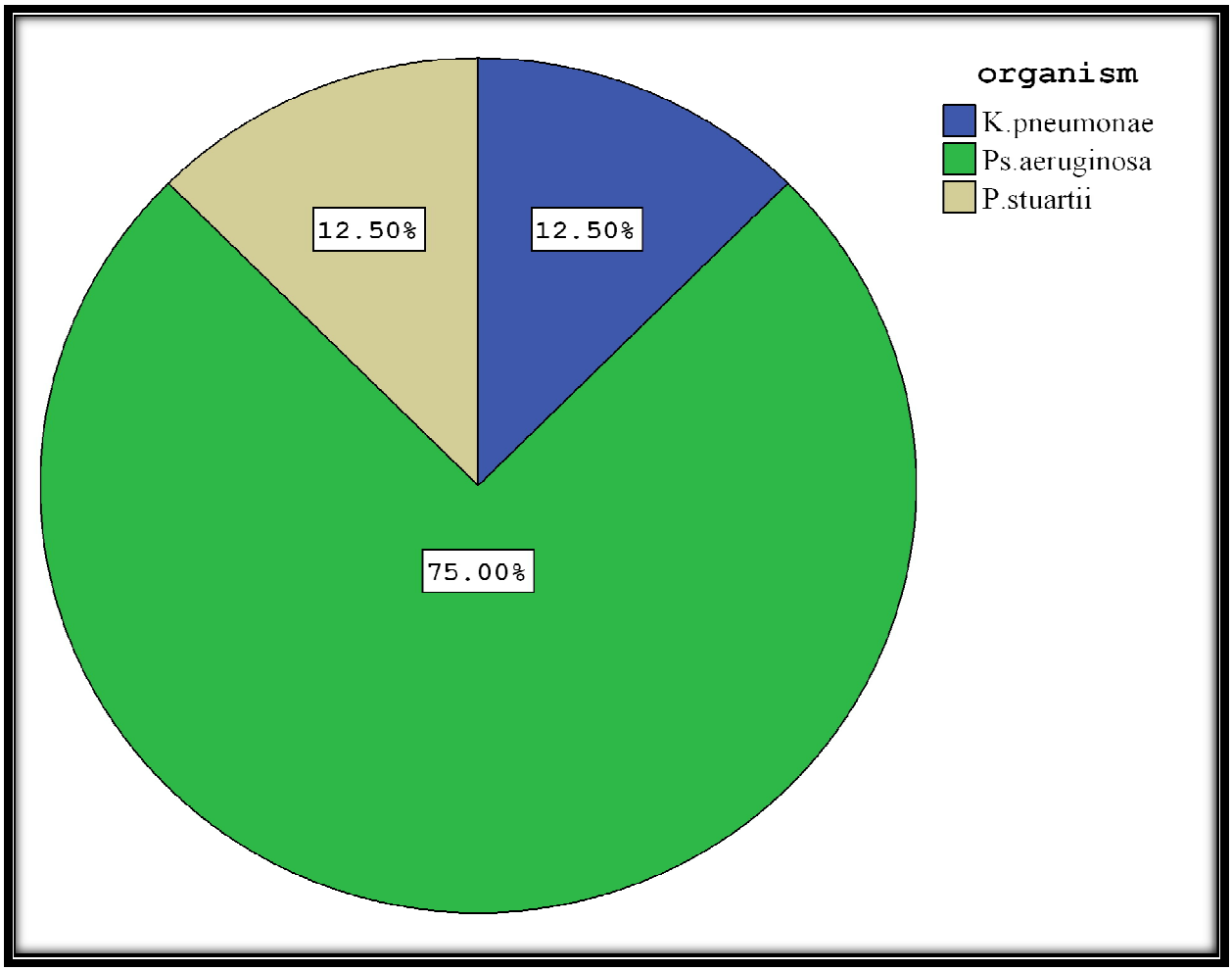

Figure (1)

Per cent of isolated Gram -ve bacteria