CHAPTER III

RESULTS

The determination of microbial contamination in various kind of unused cosmetics produced locally such as eyeliner, eyeshadow, powder lotion, shampoo, and talcum powder revealed that 70 of 141 samples (50%) were contaminated with bacteria and fungi as shown in TABLE 5. Pathogenic bacteria were isolated from 18 samples (13%).

1. Eye make-up

9 from 13 samples (69%) were found contaminated which were further isloated and identified. The pathogenic bacteria were isolated and identified from 5 samples (38%). They were *Escherichia coli*, *Pseudomonas aeruginosa*, *Salmonella* and *Staphylococcus aureus*. The details of the results of total aerobic count in different media and identification are shown in TABLE 6,7 and 8 respectively.

2. Powder lotion

11 from 20 samples (55%) were contaminated with bacteria and fungi. Further isolation and identification, 7 samples (35%) were contaminated with pathogenic bacteria, that were *Pseudomonas aeruginosa* and *Staphylococcus aureus*. The details of the total aerobic count and identification are shown in TABLE 9,10 and 11 respectively.

3. Shampoo

11 from 44 samples (25%) were found to be contaminated with bacteria and fungi. On further isolation and identification, pathogenic bacteria were isolated and identified from 6 samples (14%), they were *Escherichia coli, Pseudomonas aeruginosa, Salmonella* species and *Staphylococcus aureus*. The details of the total aerobic count and identification are shown in TABLE 12, 13 and 14 respectively.

4. Talcum powder

39 from 64 samples (61%) were contaminated with some microorganisms. The important bacteria contaminated was *Bacillus* species, that found in 21 samples(33%). The fungi contaminated were *Aspergillus* from 16 samples (25%). *Paecilomyces* from 6 samples (9%) and *Penicillium* from 4 samples (6.3%). The details of the result of total aerobic count and identification are shown in TABLE 15, 16 and 17 respectively.

TABLE 5

Type of product, number of sample and number contaminated

Product	No. of Sample	No. contaminated	Type of microorganism contaminated	Number
Eye make-up	13	9	*Escherichia coli*	1
			Pseudomonas aeruginosa	1
			Salmonella sp.	1
			Staphylococcus aureus	2
			Bacillus sp.	4
			Aspergillus sp.	3
Lotion	20	11	*Pseudomonas aeruginosa*	4
			Staphylococcus aureus	3
			Bacillus sp.	4
			Aspergillus sp.	3
			Curvularia sp.	1

TABLE 5 (Continued)

Product	No. of Sample	No. contaminated	Type of microorganism contaminated	Number
Shampoo	44	11	*Escherichia coli.*	2
			Pseudomonas aeruginosa	2
			Salmonella sp.	1
			Staphylococcus aureus	1
			Bacillus sp.	2
			Aspergillus sp.	3
Talcum powder	64	39	*Bacillus* sp.	21
			Aspergillus sp.	16
			Paecilonyces sp.	6
			Penicillium sp.	4

TABLE 6

Total aerobic count of Eye make-up in Nutrient Agar

Sample	Number of Colony			Total aerobic count per g
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
E.1	0	0	0	$<10/g$
E.2	>300	177	<30	$1.77X10^{4}/g$
E.3	0	0	0	$<10/g$
E.4	0	0	0	$<10/g$
E.5	180	<30	0	$1.80X10^{3}/g$
E.6	0	0	0	$<10/g$
E.7	148	<30	0	$1.48X10^{3}/g$
E.8	>300	159	<30	$1.59X10^{4}/g$
E.9	0	0	0	$<10/g$
E.10	>300	186	<30	$1.86X10^{4}/g$
E.11	162	<30	0	$1,62X10^{3}/g$
E.12	138	<30	0	$1.38X10^{3}/g$
E.13	284	46	0	$3.72X10^{3}/g$

TABLE 7

Total aerobic count of Eye make-up in Sabouraud Agar

Sample	Number of Colony			Total aerobic count per g
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
E.1	8	0	0	8.0X10/g
E.2	12	0	0	$1.2X10^{2}$/g
E.3	0	0	0	< 10/g
E.4	0	0	0	< 10.g
E.5	0	0	0	< 10/g
E.6	0	0	0	< 10/g
E.7	0	0	0	< 10/g
E.8	0	0	0	< 10/g
E.9	0	0	0	< 10/g
E.10	0	0	0	< 10/g
E.11	0	0	0	< 10/g
E.12	15	0	0	$1.5X10^{2}$/g
E.13	0	0	0	< 10/g

TABLE 8

Pathogens and other microorganisms in Eye make-up

Sample	Pathogens	Others
E.1	-	*Aspergillus niger*
E.2	*Staphylococcus aureus*	*Aspergillus niger*
E.3	-	-
E.4	-	-
E.5	-	*Bacillus* sp.
E.6	-	-
E.7	-	*Bacillus* sp.
E.8	*Salmonella* sp.	-
E.9	-	-
E.10	*Escherichia coli*	*Bacillus* sp.
E.11	*Staphylococcus aureus*	-
E.12	-	*Bacillus* sp., *Aspergillus* sp.
E.13	*Pseudomonas aeruginosa*	

TABLE 9

Total aerobic count of Powder lotion in Nutrient Agar

Sample	Number of Colony			Total aerobic count per ml
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
L.1	30	0	0	$3.0X10^2$/ml
L.2	143, 157 } 150	< 30	0	$1.5X10^3$/ml
L.3	0	0	0	< 10/ml
L.4	0	0	0	< 10/ml
L.5	0	0	0	< 10/ml
L.6	0	0	0	< 10/ml
L.7	0	0	0	< 10/ml
L.8	0	0	0	< 10/ml
L.9	20, 15 } 17	0	0	$1.7X10^2$/ml
L.10	86, 88 } 87	< 30	0	$8.70X10^2$/ml
L.11	144, 164 } 154	< 30	0	$1.54X10^3$/ml
L.12	18, 22 } 20	0	0	$2.0X10^2$/ml
L.13	60, 68 } 64	< 30	0	$6.4X10^2$/ml
L.14	0	0	0	< 10/ml
L.15	284, 292 } 288	60, 64 } 62	< 30	$4.54X10^3$/ml
L.16	0	0	0	< 10/ml

TABLE 9 (Continued)

Sample	Number of Colony			Total aerobic count per ml
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
L.17	211, 213 } 212	44, 47 } 45	< 30	$3.3X10^{3}$/ml
L.18	0	0	0	< 10/ml
L.19	0	0	0	< 10/ml
L.20	0	0	0	< 10/ml

TABLE 10

Total aerobic count of Power lotion in Sabouraud Agar

Sample	Number of Colony			Total aerobic count per ml
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
L.1	0	0	0	< 10/ml
L.2	0	0	0	< 10/ml
L.3	0	0	0	< 10/ml
L.4	0	0	0	< 10/ml
L.5	12	0	0	$1.2X10^{2}$/ml
L.6	0	0	0	< 10/ml
L.7	0	0	0	< 10/ml
L.8	0	0	0	< 10/ml
L.9	0	0	0	< 10/ml
L.10	0	0	0	< 10/ml
L.11	0	0	0	< 10/ml
L.12	20	0	0	$2.0X10^{2}$/ml
L.13	0	0	0	< 10/ml
L.14	0	0	0	< 10/ml
L.15	0	0	0	< 10/ml
L.16	0	0	0	< 10/ml
L.17	0	0	0	< 10/ml
L.18	0	0	0	< 10/ml
L.19	0	0	0	< 10/ml
L.20	8	0	0	8.0X10/ml

TABLE 11

Pathogens and other microorganisms in Powder lotion

Sample	Pathogens	Others
L.1	*Staphylococcus aureus*	-
L.2	-	*Bacillus* sp.
L.3	-	-
L.4	-	-
L.5	-	*Aspergillus* sp.
L.6	-	-
L.7	-	-
L.8	-	-
L.9	*Staphylococcus aureus*	-
L.10	*Pseudomonas aeruginosa*	*Bacillus* sp.
L.11	*Pseudomonas aeruginosa*	-
L.12	*Staphylococcus aureus*	*Aspergillus* sp. *Curvularia* sp.
L.13	*Pseudomonas aeruginosa*	*Bacillus* sp.
L.14	-	-
L.15	*Pseudomonas aeruginosa*	-
L.16	-	-
L.17	-	*Bacillus* sp.
L.18	-	-
L.19	-	-
L.20	-	*Aspergillus niger*

TABLE 12

Total aerobic count of Shampoo in Nutrient Agar

Sample	Number of Colony			Total aerobic count per ml
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
S.1	0	0	0	< 10/ml
S.2	0	0	0	< 10/ml
S.3	0	0	0	< 10/ml
S.4	0	0	0	< 10/ml
S.5	0	0	0	< 10/ml
S.6	0	0	0	< 10/ml
S.7	0	0	0	< 10/ml
S.8	0	0	0	< 10/ml
S.9	0	0	0	< 10/ml
S.10	120, 115 } 117	35, 40 } 37	< 30	2.43×10^3/ml
S.11	0	0	0	< 10/ml
S.12	0	0	0	< 10/ml
S.13	0	0	0	< 10/ml
S.14	0	0	0	< 10/ml
S.15	0	0	0	< 10/ml
S.16	> 300	178, 180 } 179	< 30	1.79×10^4/ml
S.17	290, 280 } 285	78, 81 } 79	< 30	5.37×10^3/ml
S.18	> 300	190, 195 } 193	< 30	1.93×10^4/ml

TABLE 12 (Continued)

Sample	Number of Colony			Total aerobic count per ml
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
S.19	> 300	189, 199 } 194	< 30	1.94×10^{4}/ml
S.20	> 300	178, 185 } 181	< 30	1.81×10^{4}/ml
S.21	0	0	0	< 10/ml
S.22	0	0	0	< 10/ml
S.23	0	0	0	< 10/ml
S.24	0	0	0	< 10/ml
S.25	0	0	0	< 10/ml
S.26	0	0	0	< 10/ml
S.27	0	0	0	< 10/ml
S.28	0	0	0	< 10/ml
S.29	0	0	0	< 10/ml
S.30	0	0	0	< 10/ml
S.31	0	0	0	< 10/ml
S.32	0	0	0	< 10/ml
S.33	0	0	0	< 10/ml
S.34	0	0	0	< 10/ml
S.35	0	0	0	< 10/ml
S.36	0	0	0	< 10/ml
S.37	0	0	0	< 10/ml

TABLE 12 (Continued)

Sample	Number of Colony			Total aerobic count per ml
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
S.38	0	0	0	< 10/ml
S.39	0	0	0	< 10/ml
S.40	0	0	0	< 10/ml
S.41	0	0	0	< 10/ml
S.42	0	0	0	< 10/ml
S.43	42, 47 } 44	< 30	0	4.40×10^{2}/ml
S.44	206, 180 } 193	< 30	0	1.93×10^{3}/ml

TABLE 13

Total aerobic count of Shampoo in Sabouraud Agar

Sample	Number of Colony			Total aerobic count per ml
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
S.1	0	0	0	<10/ml
S.2	0	0	0	<10/ml
S.3	0	0	0	<10/ml
S.4	0	0	0	<10/ml
S.5	0	0	0	<10/ml
S.6	0	0	0	<10/ml
S.7	0	0	0	<10/ml
S.8	0	0	0	<10/ml
S.9	0	0	0	<10/ml
S.10	0	0	0	<10/ml
S.11	0	0	0	<10/ml
S.12	0	0	0	<10/ml
S.13	0	0	0	<10/ml
S.14	0	0	0	<10/ml
S.15	0	0	0	<10/ml
S.16	0	0	0	<10/ml
S.17	0	0	0	<10/ml
S.18	0	0	0	<10/ml
S.19	0	0	0	<10/ml

TABLE 13 (Continued)

Sample	Number of Colony			Total aerobic count per ml
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
S.20	0	0	0	< 10/ml
S.21	0	0	0	< 10/ml
S.22	8	0	0	8.0X10/ml
S.23	0	0	0	< 10/ml
S.24	9	0	0	9.0X10/ml
S.25	0	0	0	< 10/ml
S.26	0	0	0	< 10/ml
S.27	0	0	0	< 10/ml
S.28	0	0	0	< 10/ml
S.29	0	0	0	< 10/ml
S.30	0	0	0	< 10/ml
S.31	0	0	0	< 10/ml
S.32	0	0	0	< 10/ml
S.33	0	0	0	< 10/ml
S.34	0	0	0	< 10/ml
S.35	0	0	0	< 10/ml
S.36	0	0	0	< 10/ml
S.37	0	0	0	< 10/ml
S.38	0	0	0	< 10/ml
S.39	0	0	0	< 10/ml

TABLE 13 (Continued)

Sample	Number of Colony			Total aerobic count per ml
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
S.40	0	0	0	< 10/ml
S.41	0	0	0	< 10/ml
S.42	15	0	0	$1.5X10^{2}$/ml
S.43	0	0	0	< 10/ml
S.44	0	0	0	< 10/ml

TABLE 14

Pathogens and other microorganisms in Shampoo

Sample	Pathogens	Others
S.1	-	-
S.2	-	-
S.3	-	-
S.4	-	-
S.5	-	-
S.6	-	-
S.7	-	-
S.8	-	-
S.9	-	-
S.10	*Salmonella* sp.	-
S.11	-	-
S.12	-	-
S.13	-	-
S.14	-	-
S.15	-	-
S.16	-	*Bacillus* sp.
S.17	*Escherichia coli*	-
S.18	*Pseudomonas aeruginosa*	-
S.19	*Pseudomonas aeruginosa*	-
S.20	-	*Bacillus* sp.

TABLE 14 (Continued)

Sample	Pathogens	Others
S.21	-	-
S.22	-	*Aspergillus* sp.
S.23	-	-
S.24	-	*Aspergillus* sp.
S.25	-	-
S.26	-	-
S.27	-	-
S.28	-	-
S.29	-	-
S.30	-	-
S.31	-	-
S.32	-	-
S.33	-	-
S.34	-	-
S.35	-	-
S.36	-	-
S.37	-	-
S.38	-	-
S.39	-	-
S.40	-	-

TABLE 14 (Continued)

Sample	Pathogens	Others
S.41	-	-
S.42	-	*Aspergillus* sp.
S.43	*Staphylococcus aureus*	-
S.44	*Escherichia coli*	-

TABLE 15

Total aerobic count of Talcum powder in Nutrient Agar

Sample	Number of Colony			Total aerobic count per g
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
T.1	0	0	0	< 10/g
T.2	0	0	0	< 10/g
T.3	140, 151 } 146	< 30	0	1.46×10^{3}/g
T.4	0	0	0	< 10/g
T.5	0	0	0	< 10/g
T.6	0	0	0	< 10/g
T.7	0	0	0	< 10/g
T.8	0	0	0	< 10/g
T.9	0	0	0	< 10/g
T.10	136, 140 } 138	< 30	0	1.38×10^{3}/g
T.11	0	0	0	< 10/g
T.12	0	0	0	< 10/g
T.13	0	0	0	< 10/g
T.14	0	0	0	< 10/g
T.15	152, 130 } 141	< 30	0	1.41×10^{3}/g
T.16	0	0	0	< 10/g
T.17	0	0	0	< 10/g
T.18	0	0	0	< 10/g

TABLE 15 (Continued)

Sample	Number of Colony			Total aerobic count per g
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
T.19	0	0	0	< 10/g
T.20	120, 115 } 118	< 30	0	1.18×10^3 /g
T.21	0	0	0	< 10/g
T.22	0	0	0	< 10/g
T.23	90, 125 } 108	< 30	0	1.08×10^3 /g
T.24	0	0	0	< 10/g
T.25	> 300	32, 50 } 41	0	4.1×10^3 /g
T.26	90, 115 } 103	< 30	0	1.03×10^3 /g
T.27	0	0	0	< 10/g
T.28	0	0	0	< 10/g
T.29	> 300	40, 34 } 37	0	3.7×10^3 /g
T.30	0	0	0	< 10/g
T.31	0	0	0	< 10/g
T.32	0	0	0	< 10/g
T.33	0	0	0	< 10/g
T.34	0	0	0	< 10/g
T.35	0	0	0	< 10/g
T.36	0	0	0	< 10/g
T.37	> 300	35, 45 } 40	0	4.0×10^3 /g

TABLE 15 (Continued)

Sample	Number of Colony			Total aerobic count per g
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
T.38	0	0	0	< 10/g
T.39	0	0	0	< 10/g
T.40	> 300	70, 48 } 59	0	5.9×10^3/g
T.41	100, 142 } 121	< 30	0	1.21×10^3/g
T.42	0	0	0	< 10/g
T.43	> 300	42, 30 } 36	0	3.6×10^3/g
T.44	0	0	0	< 10/g
T.45	> 300	37, 47 } 42	0	4.2×10^3/g
T.46	0	0	0	< 10/g
T.47	0	0	0	< 10/g
T.48	> 300	32, 35 } 33	0	3.30×10^3/g
T.49	0	0	0	< 10/g
T.50	92, 120 } 106	< 30	0	1.06×10^3/g
T.51	130, 102 } 116	< 30	0	1.16×10^3/g
T.52	0	0	0	< 10/g
T.53	0	0	0	< 10/g
T.54	> 300	35, 40 } 37	0	3.70×10^3/g

TABLE 15 (Continued)

Sample	Number of Colony			Total aerobic count per g
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
T.55	> 300	40, 50 } 45	0	4.5×10^{3}/g
T.56	150, 142 } 146	< 30	0	1.46×10^{3}/g
T.57	> 300	32, 44 } 38	0	3.8×10^{3}/g
T.58	0	0	0	< 10/g
T.59	0	0	0	< 10/g
T.60	0	0	0	< 10/g
T.61	0	0	0	< 10/g
T.62	0	0	0	< 10/g
T.63	> 300	22, 30 } 26	0	2.6×10^{3}/g
T.64	0	0	0	< 10/g

TABLE 16

Total aerobic count of Talcum powder in Sabouraud Agar

Sample	Number of Colony			Total aerobic count per g
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
T.1	15	0	0	$1.5X10^{2}/g$
T.2	0	0	0	$< 10/g$
T.3	0	0	0	$< 10/g$
T.4	0	0	0	$< 10/g$
T.5	0	0	0	$< 10/g$
T.6	0	0	0	$< 10/g$
T.7	0	0	0	$< 10/g$
T.8	0	0	0	$< 10/g$
T.9	0	0	0	$< 10/g$
T.10	12	0	0	$1.2X10^{2}/g$
T.11	19	0	0	$1.9X10^{2}/g$
T.12	0	0	0	$< 10/g$
T.13	0	0	0	$< 10/g$
T.14	0	0	0	$< 10/g$
T.15	0	0	0	$< 10/g$
T.16	0	0	0	$< 10/g$
T.17	0	0	0	$< 10/g$
T.18	25	0	0	$2.5X10^{2}/g$
T.19	0	0	0	$< 10/g$

TABLE 16 (Continued)

Sample	Number of Colony			Total aerobic count per g
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
T.20	0	0	0	< 10/g
T.21	0	0	0	< 10/g
T.22	18	0	0	$1.8X10^{2}$/g
T.23	0	0	0	< 10/g
T.24	19	0	0	$1.9X10^{2}$/g
T.25	14	0	0	$1.4X10^{2}$/g
T.26	0	0	0	< 10/g
T.27	0	0	0	< 10/g
T.28	7	0	0	7.0X10/g
T.29	10	0	0	$1.0X10^{2}$/g
T.30	5	0	0	5.0X10/g
T.31	15	0	0	$1.5X10^{2}$/g
T.32	20	0	0	$2.0X10^{2}$/g
T.33	8	0	0	8.0X10/g
T.34	25	0	0	$2.5X10^{2}$/g
T.35	11	0	0	$1.1X10^{2}$/g
T.36	21	0	0	$2.1X10^{2}$/g
T.37	10	0	0	$1.0X10^{2}$/g
T.38	12	0	0	$1.2X10^{2}$/g

TABLE 16 (Continued)

Sample	Number of Colony			Total aerobic count per g
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
T.39	0	0	0	< 10/g
T.40	0	0	0	< 10/g
T.41	0	0	0	< 10/g
T.42	8	0	0	8.0X10/g
T.43	0	0	0	< 10/g
T.44	0	0	0	< 10/g
T.45	0	0	0	< 10/g
T.46	15	0	0	$1.5X10^{2}$/g
T.47	25	0	0	$2.5X10^{2}$/g
T.48	0	0	0	< 10/g
T.49	0	0	0	< 10/g
T.50	0	0	0	< 10/g
T.51	12	0	0	$1.2X10^{2}$/g
T.52	0	0	0	< 10/g
T.53	0	0	0	< 10/g
T.54	0	0	0	< 10/g
T.55	0	0	0	< 10/g
T.56	0	0	0	< 10/g
T.57	0	0	0	< 10/g

TABLE 16 (Continued)

Sample	Number of Colony			Total aerobic count per g
	10^{-1} diln	10^{-2} diln	10^{-3} diln	
T.58	0	0	0	$< 10/g$
T.59	0	0	0	$< 10/g$
T.60	0	0	0	$< 10/g$
T.61	0	0	0	$< 10/g$
T.62	0	0	0	$< 10/g$
T.63	0	0	0	$< 10/g$
T.64	20	0	0	$2.0X10^{2}/g$

TABLE 17

Pathogens and other microorganisms in Talcum powder

Sample	Pathogens	Others
T.1	-	*Aspergillus niger*
T.2	-	-
T.3	-	*Bacillus* sp.
T.4	-	-
T.5	-	-
T.6	-	-
T.7	-	-
T.8	-	-
T.9	-	-
T.10	-	*Aspergillus* sp., *Bacillus* sp.
T.11	-	*Penicillium* sp.
T.12	-	-
T.13	-	-
T.14	-	-
T.15	-	*Bacillus* sp.
T.16	-	-
T.17	-	-
T.18	-	*Aspergillus* sp.
T.19	-	-

TABLE 17 (Continued)

Sample	Pathogens	Others
T.20	-	*Bacillus* sp.
T.21	-	-
T.22	-	*Aspergillus* sp.
T.23	-	*Bacillus* sp.
T.24	-	*Penicillium* sp.
T.25	-	*Paecilomyces* sp., *Bacillus* sp. *Aspergillus* sp.
T.26	-	*Bacillus* sp.
T.27	-	-
T.28	-	*Aspergillus* sp.
T.29	-	*Bacillus* sp., *Aspergillus* sp.
T.30	-	*Aspergillus* sp.
T.31	-	*Aspergillus* sp. *Paecilomyces* sp.
T.32	-	*Aspergillus* sp.
T.33	-	*Penicillium* sp.
T.34	-	*Paecilomyces* sp.
T.35	-	*Aspergillus niger*

TABLE 17 (Continued)

Sample	Pathogens	Others
T.36	-	*Aspergillus* sp., *Paecilomyces* sp.
T.37	-	*Aspergillus* sp., *Bacillus* sp.
T.38	-	*Penicillium* sp.
T.39	-	-
T.40	-	*Bacillus* sp.
T.41	-	*Bacillus* sp.
T.42	-	*Aspergillus* sp.
T.43	-	*Bacillus* sp.
T.44	-	-
T.45	-	*Bacillus* sp.
T.46	-	*Paecilomyces* sp.
T.47	-	*Aspergillus* sp.
T.48	-	*Bacillus* sp.
T.49	-	-
T.50	-	*Bacillus* sp.
T.51	-	*Bacillus* sp. *Aspergillus* sp.
T.52	-	-

TABLE 17 (Continued)

Sample	Pathogens	Others
T.53	-	-
T.54	-	*Bacillus* sp.
T.55	-	*Bacillus* sp.
T.56	-	*Bacillus* sp.
T.57	-	*Bacillus* sp.
T.58	-	-
T.59	-	-
T.60	-	-
T.61	-	-
T.62	-	-
T.63	-	*Bacillus* sp.
T.64	-	*Paecilomyces* sp.