

**MICROBIOLOGICAL STUDIES ON THE
STABILITY OF INCORPORATED PLANT
MATERIALS IN CERTAIN COSMETIC
PREPARATIONS**

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ABSTRACT

A survey study was carried out to determine the microbial load of different cosmetics produced in Egypt. Fifty eight cosmetic samples were collected and microbiologically analyzed to determine the densities of total microbes, total fungi, coliform group, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, anaerobes. The efficacy of preservatives occurred

in these cosmetic samples was evaluated by inoculating them with different microorganisms and enumerating them after 7, 14, 21 and 28 days of inoculation. The effect of commonly used preservatives (methyl and propyl parabens) in inhibiting the growth of microorganisms was tested in laboratory prepared cosmetics (creams, shampoo and lotion). The inhibitory effect of these preservatives was evaluated singly or in combination of them in different ratios and concentrations. Extracts of chamomila, calendula and *Aloe vera* were added to laboratory prepared creams and shampoos to detect their effect on microbial growth in such cosmetics and therefore, their stability.

The obtained results show that the majority of cosmetics were free from microbial contamination. They also proved to be unsuitable for the growth of inoculated microorganisms. A combination of methyl and propyl paraben in a ratio of 1:1 and a concentration of 0.1% gave the highest inhibitory effect against *Staph. aureus* and *E. coli*, while the growth of *Ps. aeruginosa* and a mixed fungal and bacterial culture was suppressed by a higher concentration being 0.15 and 0.20% respectively. It was also found that plant extracts added to cosmetic preparation almostly decreased their stability.

Key Words: Cosmetics, cosmetic preservatives, Parabens, Chamomile, Calendula, *Aloe vera*

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CONTENTS

	Page
1. INTRODUCTION	1
2. REVIEW OF LITERATURE	3
2.1. Hazards of microbial contamination of cosmetic products	3
2.1.1. Infections induced by using cosmetic preparations contaminated with	3
2.1.1.1. <i>Pseudomonas</i> species	3
2.1.1.2. <i>Escherichia coli</i>	6
2.1.1.3. <i>Klebsiella</i> species	6
2.1.1.4. <i>Staphylococcus</i> species	7
2.1.1.5. Anaerobic bacteria	8
2.1.1.6. Moulds	8
2.1.1.7. <i>Candida</i> species	9
2.1.2. Microbial toxins in cosmetics	9
2.1.3. Spoilage of cosmetics	11
2.1.3.1. Physical and chemical deterioration	11
2.1.3.2. Microbial deterioration	11
2.1.3.2.1. Sources of contamination before and during manu- facture	13
2.1.3.2.1.1. Raw materials	13
2.1.3.2.1.2. Air	16
2.1.3.2.1.3. Water	17
2.1.3.2.1.4. Personnel	18
2.1.3.2.1.5. Equipment	19
2.1.3.2.2. Contamination after manu- facture	19

	Page
2.1.3.2.3. Contamination during the using of cosmetic preparations	19
2.1.4. Control of microbial contamination in cosmetics and toiletries	20
2.1.4.1. Application of (GMP)	20
2.1.4.2. Microbial control of raw materials	21
2.1.4.2.1. Treatment	21
2.1.4.2.2. Methods of testing	21
2.1.4.2.2.1. Counting methods	22
2.1.4.2.2.2. Methods for specific microbial types	22
2.1.4.3. Microbial control of water	23
2.1.4.4. Microbial control of manufacturing environment	23
2.1.4.4.1. Design of manufacturing area	23
2.1.4.4.2. Provision of services	24
2.1.4.4.3. Hygiene policy	24
2.1.4.4.4. Control of vermin	25
2.1.4.5. Microbial control of manufacturing equipment	25
2.1.4.6. Microbial control of personnel	26
2.1.4.7. Inclusion of preservatives	26
2.1.4.8. Product formulation	30
2.2. Official and unofficial limits of microbial contamination of cosmetics and toiletries	31
2.3. In house guidelines	33
2.4. Plant extracts in cosmetics	34

3. MATERIALS AND METHODS	36
3.1. Determination of microbial load of some cosmetics	36
3.2. Sampling and sample preparation	39
3.2.1. Skin and hair creams	39
3.2.2. Foundation creams	39
3.2.3. Liquid products	39
3.2.4. Gels	39
3.2.5. Lipsticks	39
3.2.6. Face powders	40
3.2.7. Talc powders	40
3.3. Microbiological analysis	40
3.3.1. Total viable aerobic count	40
3.3.2. Total fungal count	41
3.3.3. Coliform count	41
3.3.4. <i>Staphylococcus aureus</i> plate count ...	42
3.3.5. <i>Pseudomonas aeruginosa</i> plate count	43
3.3.6. Total anaerobic bacterial count	43
3.4. Formulae of some laboratory prepared cosmetics	44
3.4.1. Creams (all-purpose creams)	44
3.4.1.1. Water in oil cream	44
3.4.1.2. Oil in water cream	45
3.4.2. Lotion (hand and body)	45
3.4.3. Shampoo	46
3.5. Cosmetics formulae containing plant extracts	47
3.5.1. Chamomile extract	47
3.5.2. Calendula extract	48
3.5.3. <i>Aloe vera</i> extract	49
3.6. Preservative efficacy test	50
3.7. Preservatives	50
3.8. Test organisms	51

	Page
4. RESULTS AND DISCUSSION	52
4.1. Microbial load of certain cosmetics produced in Egypt.	52
4.2. Viability of inoculated microorganisms in certain cosmetics produced in Egypt	52
4.3. Effect of commonly used preservatives on microbial growth in laboratory prepared cosmetics	86
4.4. Microbial growth and pH changes of labora- tory processed cosmetics as influenced by plant extracts	100
5. SUMMARY	107
6. REFERENCES	111
ARABIC SUMMARY	

LIST OF TABLES

Table	Page
1. Collected cosmetics and toiletries	37
2. Total microbial densities in some skin creams	53
3. Total microbial densities in some hair creams	54
4. Total microbial densities in some hair gels	55
5. Total microbial densities in some lotions	55
6. Total microbial densities in some balsams	56
7. Total microbial densities in some shampoos	57
8. Total microbial densities in some face powders ..	58
9. Total microbial densities in some eye shadows ...	58
10. Total microbial densities in some lipstiks	59
11. Total microbial densities in some mascaras	59
12. Total microbial densities in some liquid make- ups	60
13. Bacterial viability in inoculated skin creams	63
14. Bacterial viability in inoculated hair creams	64
15. Bacterial viability in inoculated hair gels	65
16. Bacterial viability in inoculated body lotions	66
17. Bacterial viability in inoculated balsams	67
18. Bacterial viability in inoculated shampoos	68
19. Bacterial viability in inoculated face powders	70
20. Bacterial viability in inoculated eye shadows	71
21. Bacterial viability in inoculated mascaras	72
22. Bacterial viability in inoculated liquid make-ups	73
23. Microbial survival in skin creams inoculated with a mixture of microorganisms	75
24. Microbial survival in hair creams inoculated with a mixture of microorganisms	76
25. Microbial survival in hair gels inoculated with a mixture of microorganisms	77

26. Microbial survival in body lotions inoculated with a mixture of microorganisms	78
27. Microbial survival in balsams inoculated with a mixture of microorganisms	79
28. Microbial survival in shampoos inoculated with a mixture of microorganisms	80
29. Microbial survival in face powders inoculated with a mixture of microorganisms	82
30. Microbial survival in eye shadows inoculated with a mixture of microorganisms	83
31. Microbial survival in mascaras inoculated with a mixture of microorganisms	84
32. Microbial survival in liquid make-ups inoculated with a mixture of microorganisms	85
33. Microbial growth in uninoculated laboratory prepared cosmetics without the addition of preservative	90
34. Microbial growth of inoculated micro-organisms in laboratory prepared cosmetics without the addition of preservative	91
35. Microbial growth of inoculated micro-organisms in laboratory prepared cosmetics in the presence of preservative	92
36. Effect of preservative concentrations on the growth of microorganisms in a laboratory prepared water-oil cream	93
37. Effect of preservative concentrations on the growth of microorganisms in a laboratory prepared oil-water cream	94
38. Effect of preservative concentrations on the growth of microorganisms in a laboratory prepared shampoo	95