

EFFECT OF PRE-TREATMENT ON  
DECOLORIZATION OF CASHEW LEAVES  
EXTRACTS

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# PROBLEM STATEMENT

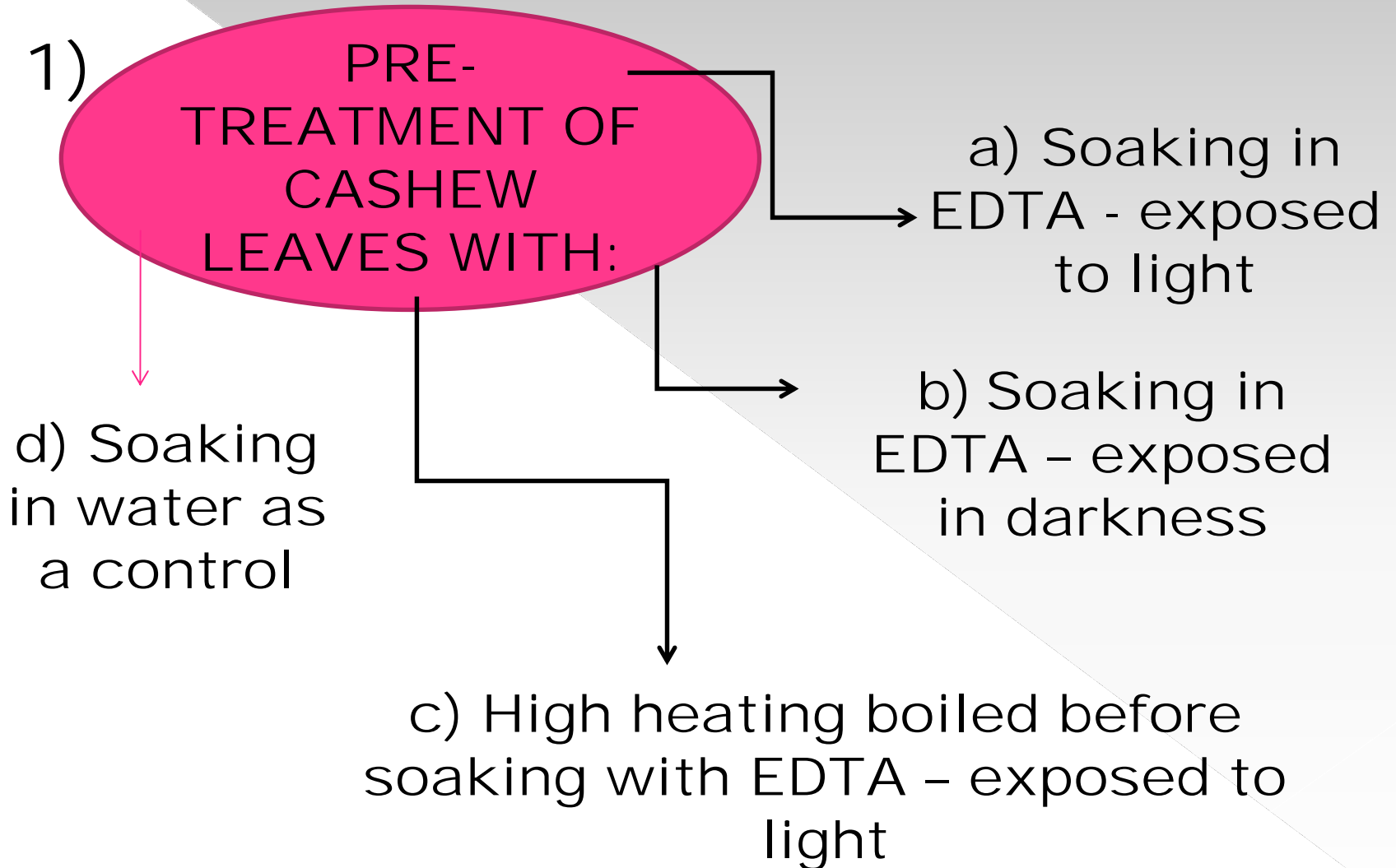
- ◉ recently, the study was conducted to produce rejuvenating cream using extract of guava and cashew leaves as it is antimicrobial agents.
- ◉ However, the high green color intensity of the extracts spoil its appearance although the microbial activity was significant.
- ◉ Therefore, the study was conducted to produce decolorized antimicrobial agent from cashew leaves.

# OBJECTIVE

Two main objectives in this study are:

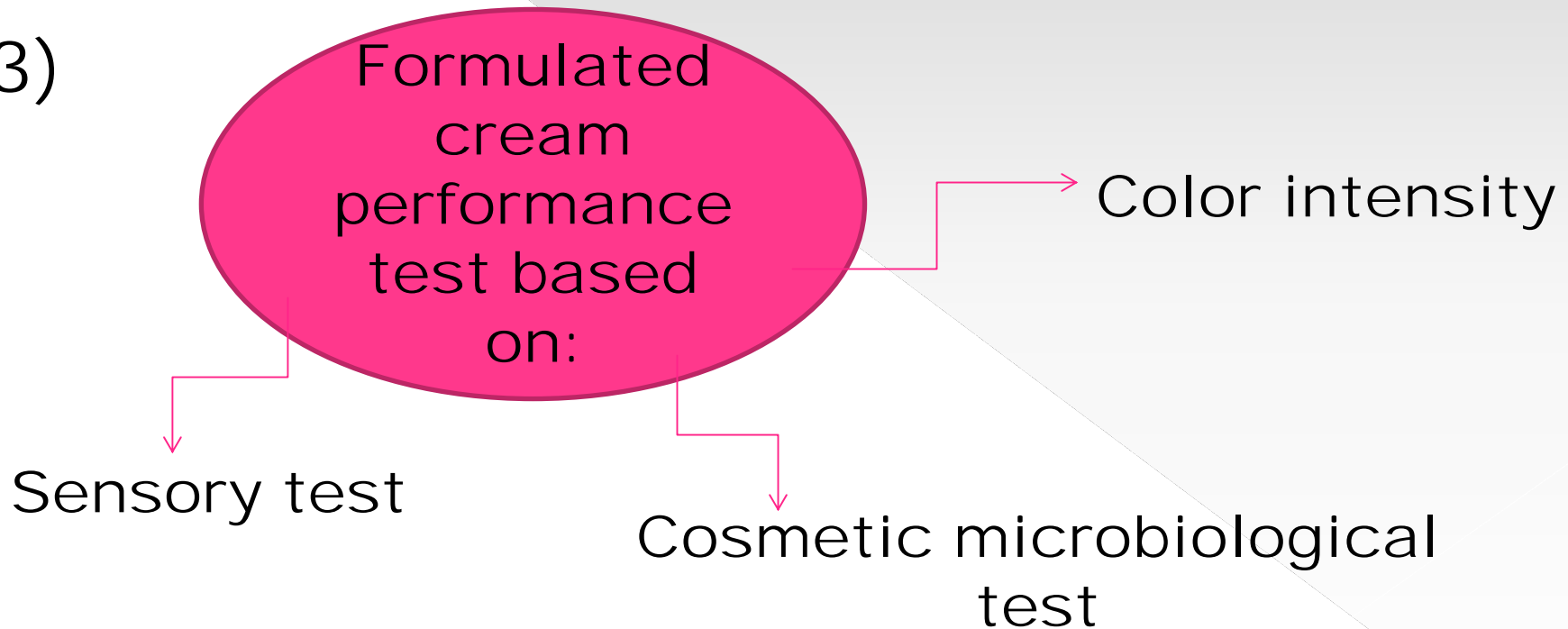
- To study the effect of pre-treatment on decolorization of cashew leaves extracts.
- To study the microbial activities of decolorized Cashew leaves extracts.

# SCOPE OF RESEARCH

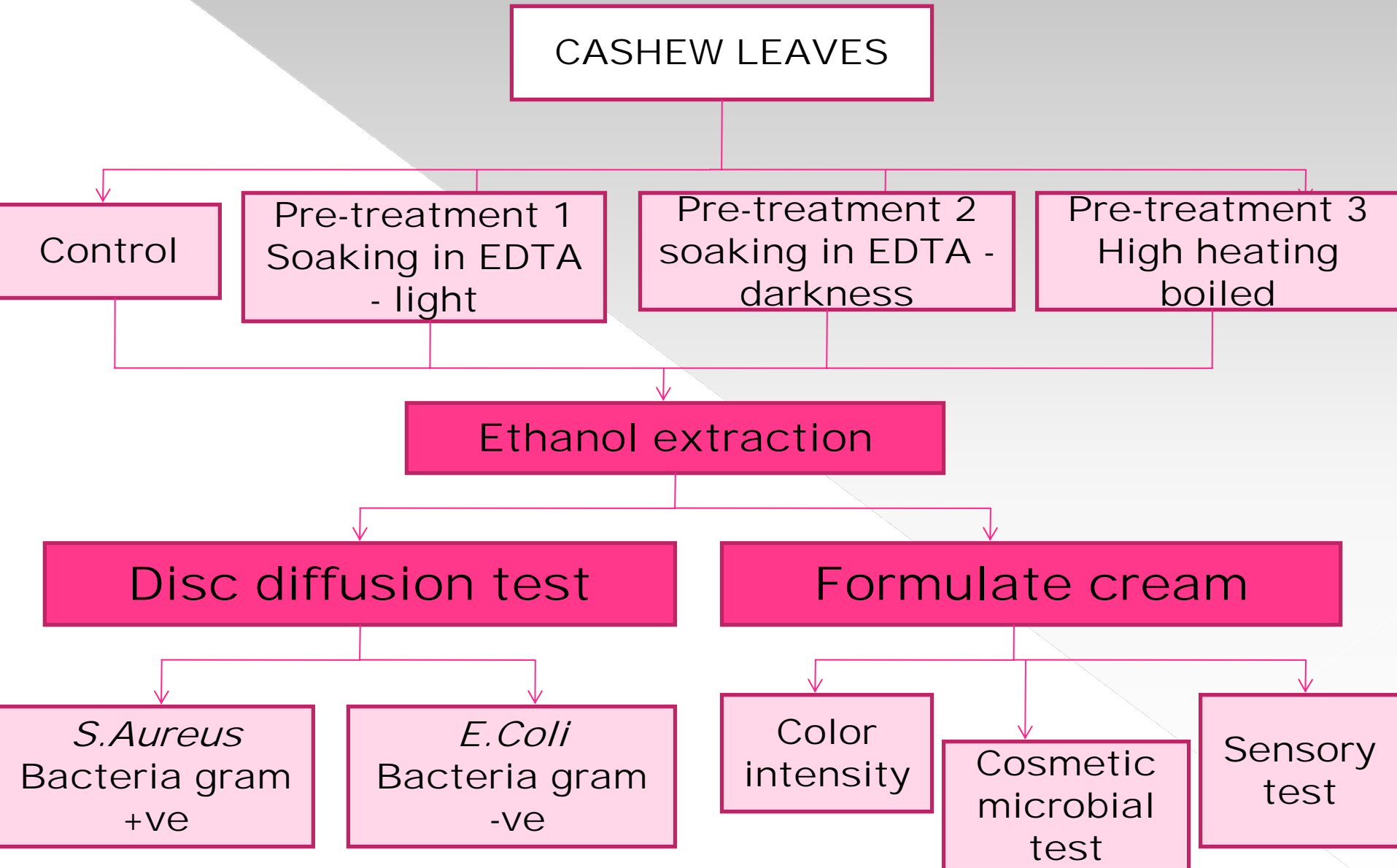


2) Microbial activity testing using disc diffusion antimicrobial susceptibility test

3)



# RESEARCH METHODOLOGY..



# RESULT AND DISCUSSION

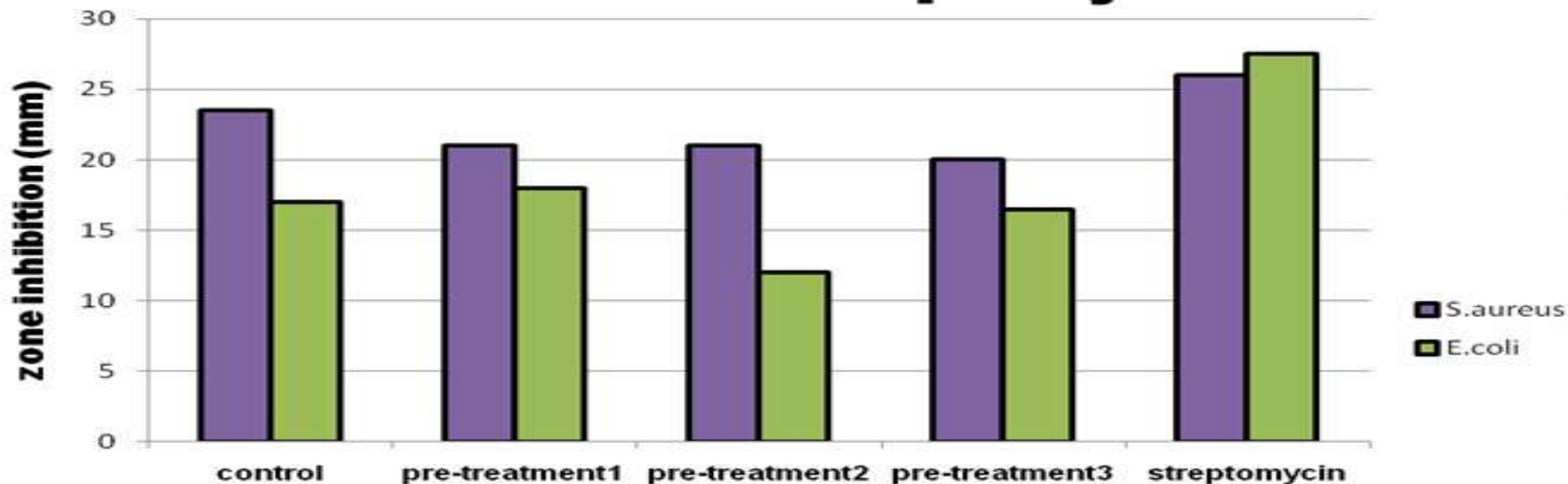
## ○ Pre-treatment

Time (hr)	Pre-treatment 1 (Soaking in EDTA-exposed to light )	Pre-treatment 2 (Soaking in EDTA-exposed in darkness)	Pre-treatment 3 (High heating boiling)	Water control
0	Dark green	Dark green	Dark green	Dark green
20	Green yellowish (bleach)	Green (not bleach)	Yellow (bleach)	Dark green (not bleach)

# Disc diffusion antimicrobial test

Samples (*duplicate)	<i>Staphylococcus aureus</i>		<i>Escherichia coli</i>	
	Zone inhibition	Activity index*	Zone inhibition	Activity index*
<b>Control</b> (none treated leaves)	23.5 mm	0.9	17 mm	0.62
<b>Pre-treatment 1</b> (Soaking in EDTA-exposed to light)	21 mm	0.81	18 mm	0.65
<b>Pre-treatment 2</b> (Soaking in EDTA-exposed in darkness)	21 mm	0.81	12 mm	0.44
<b>Pre-treatment 3</b> (High heating boiling and soaking in EDTA-exposed to light)	20 mm	0.77	16.5 mm	0.6

## Zone of inhibition for cashew leaves extracts and streptomycin





# Color intensity test

A= +Ve control  
-Methyl Paraben



Rack	Color
1	Red 0
2	Red 0
3	Red 0
4	Yellow 0.2, 0.1, 0
5	Yellow 1.0, 0
6	Yellow 0
7	Blue 0.4, 0.3, 0.2, 0.1, 0
8	Blue 0
9	Blue 0
10	Neutral 0.1, 0
11	Neutral 0

B= -ve control (2.5  
g none treated)



Rack	Color
1	Red 0.2, 0.1, 0
2	Red 3.0, 2.0, 1.0, 0
3	Red 0
4	Yellow 0.3, 0.2, 0.1, 0
5	Yellow 3.0, 2.0, 1.0, 0
6	Yellow 10.0, 0
7	Blue 0.2, 0.1, 0
8	Blue 2.0, 1.0, 0
9	Blue 0
10	Neutral 0
11	Neutral 2.0, 1.0, 0

C= 2.5 g cashew  
leaves extract with  
pre-treatment 1



Rack	Color
1	Red 0.4, 0.3, 0.2, 0.1, 0
2	Red 0
3	Red 0
4	Yellow 0.2, 0.1, 0
5	Yellow 3.0, 2.0, 1.0, 0
6	Yellow 0
7	Blue 0.4, 0.3, 0.2, 0.1, 0
8	Blue 0
9	Blue 0
10	Neutral 0
11	Neutral 0

D=2.5 g cashew leaves extract with pre-treatment 3



Rack	Color
1	Red 0.2, 0.1, 0
2	Red 1.0, 0
3	Red 0
4	Yellow 0.4, 0.3, 0.2, 0.1, 0
5	Yellow 2.0, 1.0, 0
6	Yellow 0
7	Blue 0
8	Blue 0
9	Blue 0
10	Neutral 0.1, 0
11	Neutral 0

E=5.0 g cashew leaves extract with pre-treatment 1



Rack	Color
1	Red 0.1, 0
2	Red 1.0, 0
3	Red 0
4	Yellow 0.1, 0
5	Yellow 0
6	Yellow 10.0, 0
7	Blue 0.3, 0.2, 0.1, 0
8	Blue 0
9	Blue 0
10	Neutral 0
11	Neutral 0

F= 5.0 g cashew leaves extract with pre-treatment 3



Rack	Color
1	Red 0.2, 0.1, 0
2	Red 1.0, 0
3	Red 0
4	Yellow 0.2, 0.1, 0
5	Yellow 1.0, 0
6	Yellow 10.0, 0
7	Blue 0.3, 0.2, 0.1, 0
8	Blue 1.0, 0
9	Blue 0
10	Neutral 0
11	Neutral 0

**G** = 10.0 g cashew leaves extract with pre-treatment 1



Rack	Color
1	Red 0.7, 0.6, 0.5, 0.4, 0.3, 0.2, 0.1,
2	Red 1.0, 0
3	Red 0
4	Yellow 0.7, 0.6, 0.5, 0.4, 0.3, 0.2, 0
5	Yellow 6.0, 5.0, 4.0, 3.0, 2.0, 1.0, 0
6	Yellow 10.0, 0
7	Blue 0.5, .4, 0.3, 0.2, 0.1, 0
8	Blue 1.0, 0
9	Blue 0
10	Neutral 0
11	Neutral 0

**H** = 10.0 g cashew leaves extract with pre-treatment 3

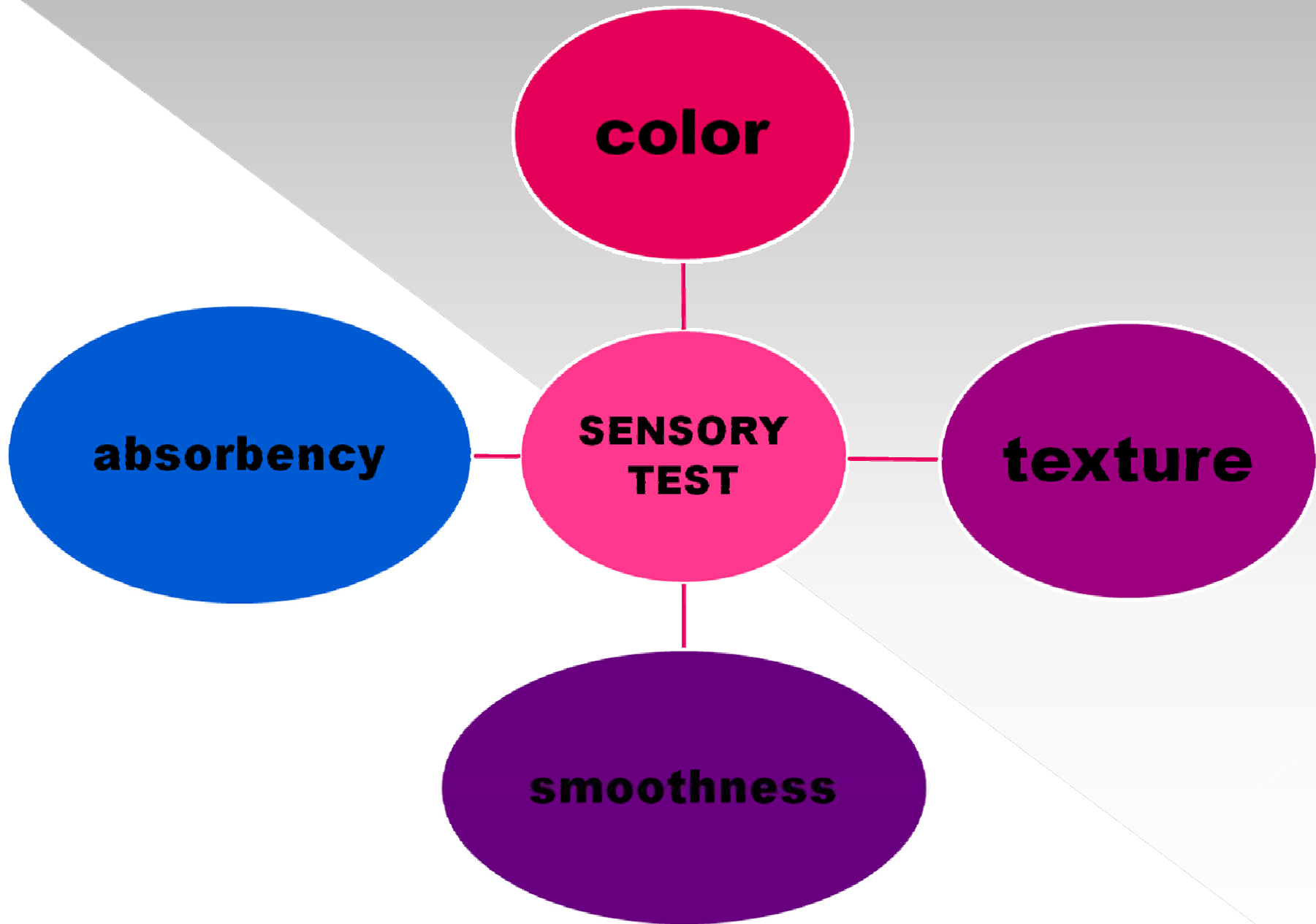


Rack	Color
1	Red 0.6, 0.5, 0.4, 0.3, 0.2, 0.1, 0
2	Red 3.0, 2.0, 1.0, 0
3	Red 0
4	Yellow 0
5	Yellow 1.0, 0
6	Yellow 10.0, 0
7	Blue 0.3, 0.2, 0.1, 0
8	Blue 2.0, 1.0, 0
9	Blue 0
10	Neutral 0.3, 0.2, 0.1, 0
11	Neutral 0

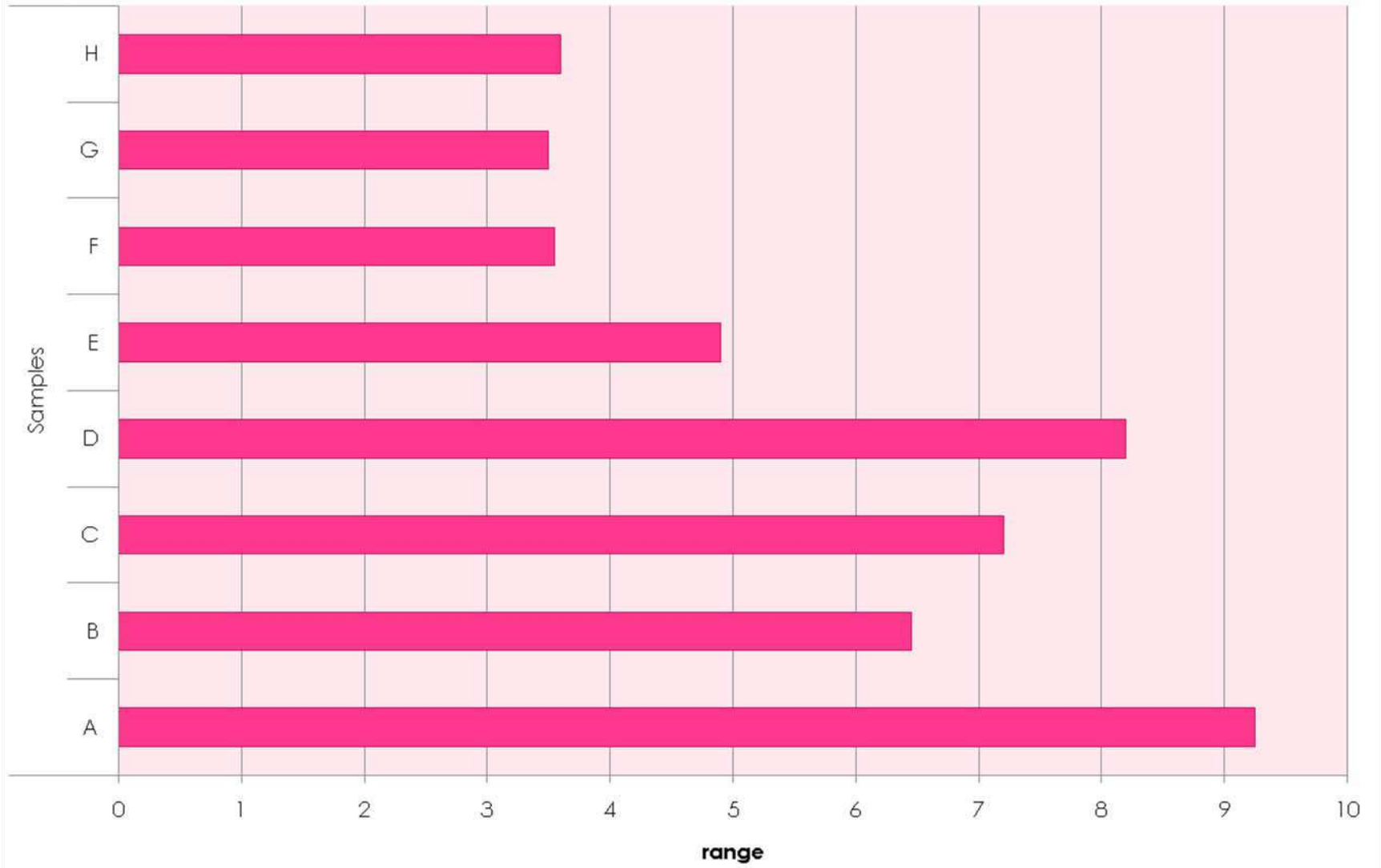
# Cosmetic microbial test

Types of medium agar	Dilution factor	samples							
		A	B	C	D	E	F	G	H
<b>Modified Lethen Agar</b> (MLA)  Aerobic plate count	10 <sup>1</sup>	-	3x10 <sup>1</sup>	-	1x10 <sup>1</sup>	-	1x10 <sup>1</sup>	-	-
	10 <sup>2</sup>	-	-	-	1x10 <sup>2</sup>	-	-	-	-
	10 <sup>3</sup>	-	-	1x10 <sup>3</sup>	-	-	-	-	-
	10 <sup>4</sup>	-	-	-	-	-	-	-	-
	10 <sup>5</sup>	-	-	-	-	-	-	-	-
<b>Baird-Paiker (BP)</b>  <i>Staphylococcus aureus</i>	10 <sup>1</sup>	3x10 <sup>1</sup>	2x10 <sup>1</sup>	-	-	-	1x10 <sup>1</sup>	-	-
	10 <sup>2</sup>	-	-	-	-	-	-	-	-
	10 <sup>3</sup>	-	-	-	1x10 <sup>3</sup>	-	1x10 <sup>3</sup>	-	-
	10 <sup>4</sup>	-	-	-	-	-	-	-	-
	10 <sup>5</sup>	-	-	-	-	-	-	-	-
<b>(PDA)</b>  Yeast and mold	10 <sup>1</sup>	-	-	-	-	-	-	-	-
	10 <sup>2</sup>	-	-	-	-	-	-	-	-
	10 <sup>3</sup>	-	-	-	-	-	-	-	-
	10 <sup>4</sup>	-	-	-	-	-	-	-	-
	10 <sup>5</sup>	-	-	-	-	-	-	-	-

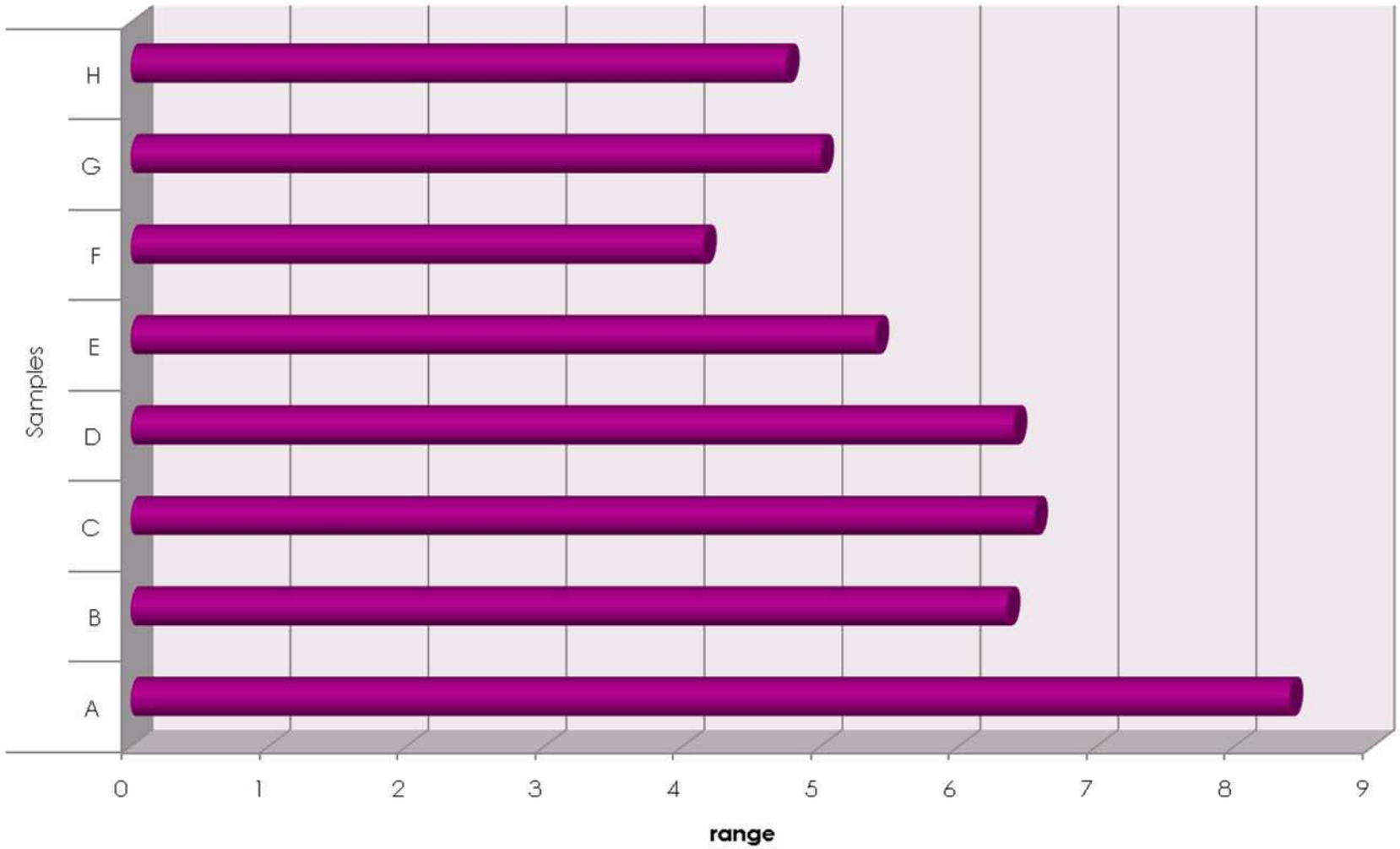
- ⊙ A = +ve Control (methylparaben)
- ⊙ B = -ve Control (2.5 g cashew leaves extract none treated leaves)
- ⊙ C = 2.5 g cashew leaves extract with pre-treatment 1 (Soaking in EDTA-exposed to light)
- ⊙ D = 2.5 g cashew leaves extract with pre-treatment 3 (High heating boiling and soaking in EDTA-exposed to light)
- ⊙ E = 5.0 g cashew leaves extract with pre-treatment 1
- ⊙ F = 5.0 g cashew leaves extract with pre-treatment 3
- ⊙ G = 10.0 g cashew leaves extract with pre-treatment 1
- ⊙ H = 10.0 g cashew leaves extract with pre-treatment 3



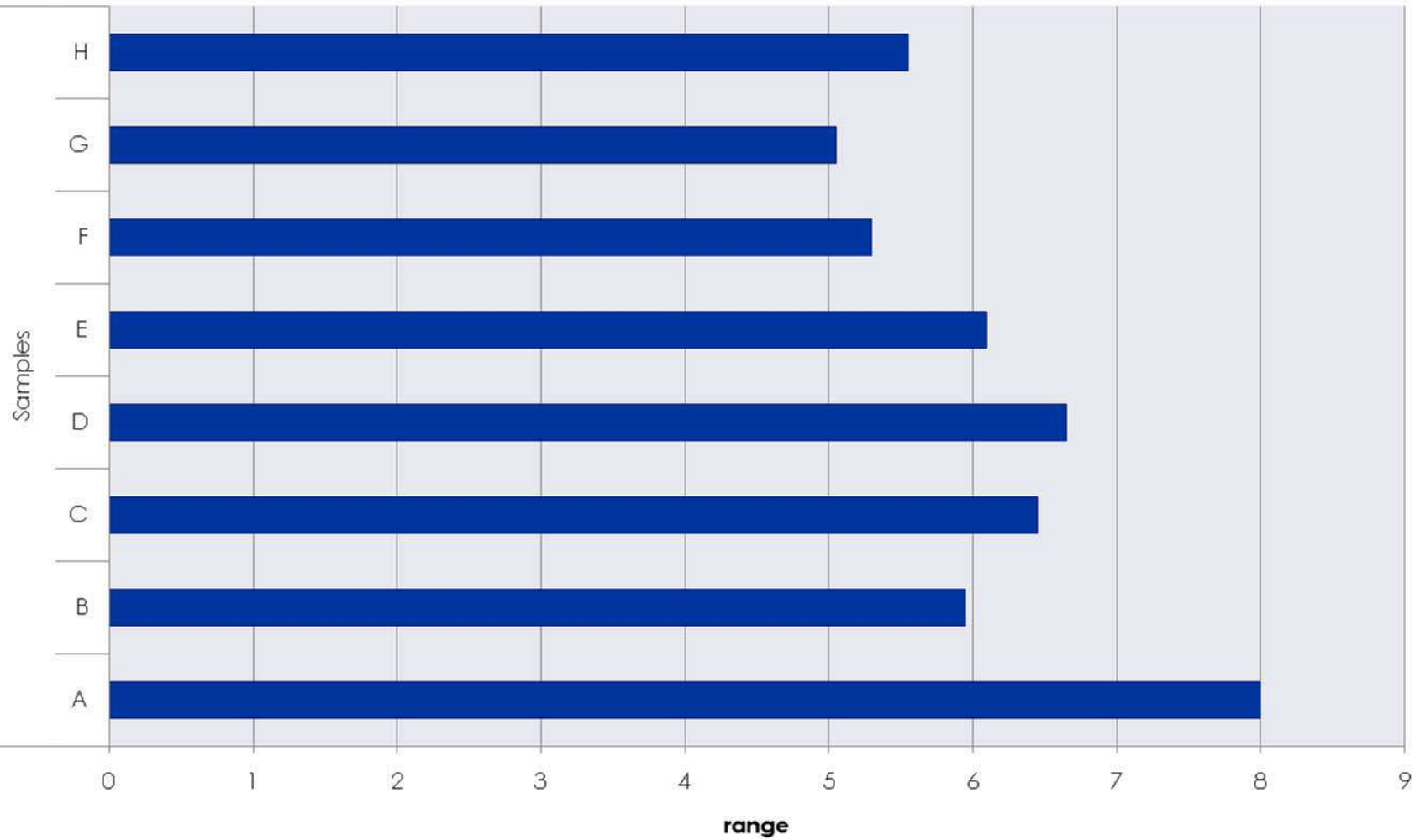
# Color



# Texture

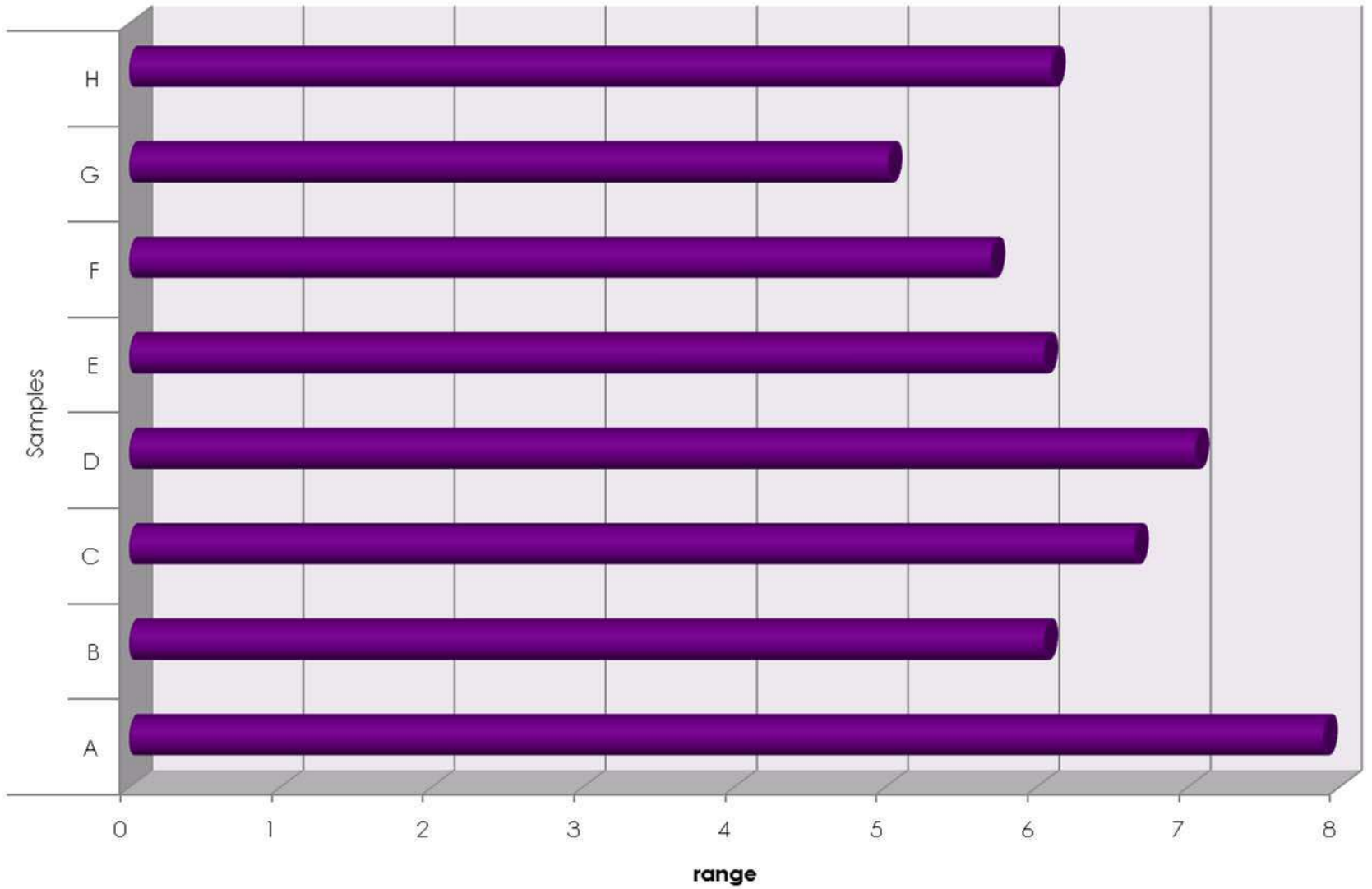


# Smoothness

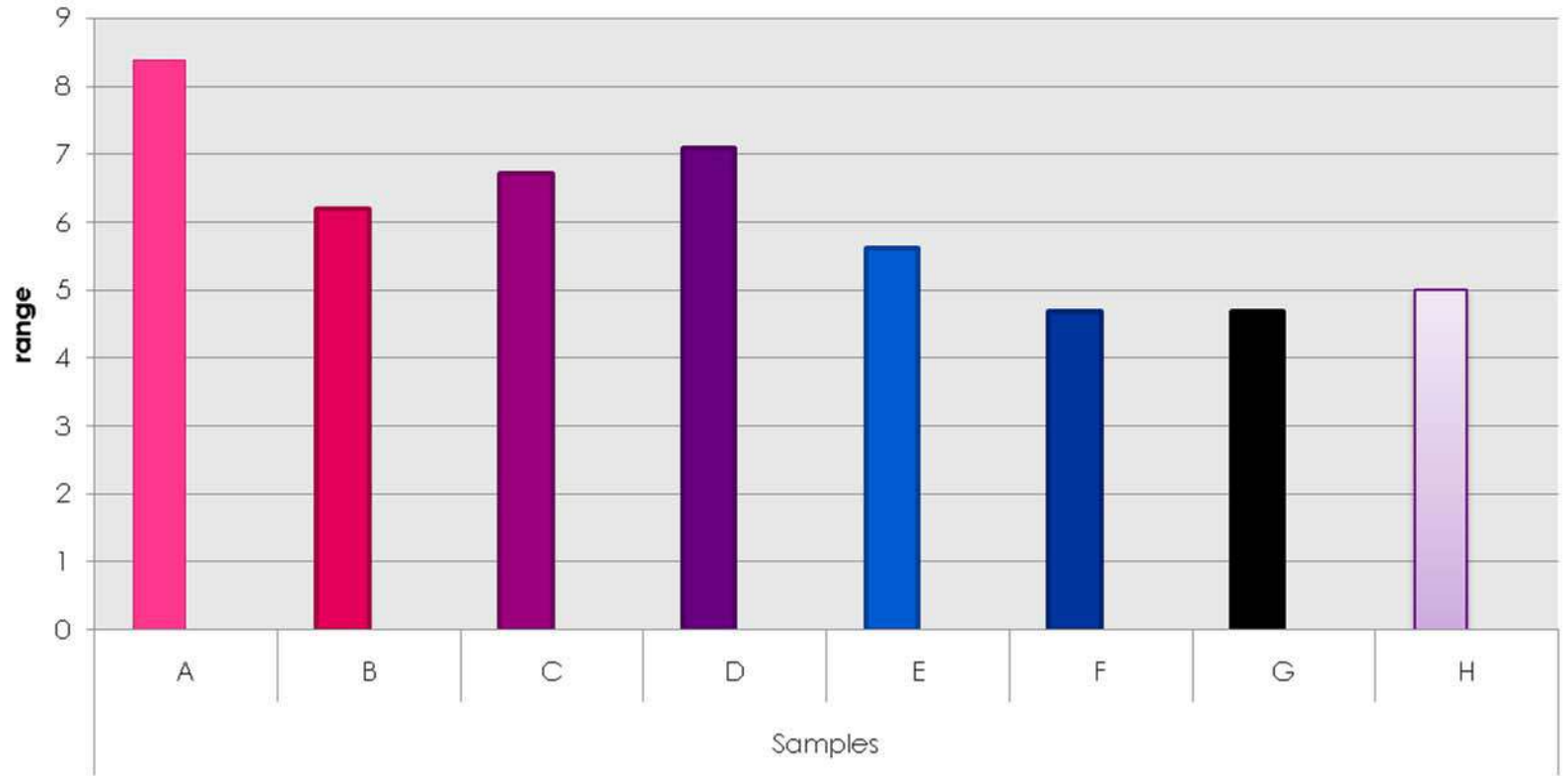




# Absorbency



## overall performance



# CONCLUSION...

- Pre-treatment 3 using high heating boiled-soaking in EDTA and exposed to light is recommended before extraction of cashew leaves.
- Pre-treatment used did not effect the microbial activity of extract.
- Cream formulate with 2.5 g cashew leaves extract with pre-treatment 3 which is sample D give a acceptable color for user.

# RECOMMENDATIONS..

- ◉ Color of sample D can be improved using method such as activated carbon treatment but the microbial activity for activated carbon should be study again.