

# Antimicrobial and Antioxidant Effect of Active Material from *Cynanchi Radix*.

Da-som Kim<sup>1</sup>, Hyeon-jeong Kim<sup>2</sup>, Yu-hyeon Shin<sup>2</sup>, Hyeon-guk Jeong<sup>1</sup>, Seul-gi Lee<sup>1</sup>, Eun-su Lee<sup>1</sup>, Pil-jun Ha<sup>1</sup>, Young-je Cho<sup>3</sup>, Bong-Jeun An<sup>1\*</sup>

<sup>1</sup>Dept. of Cosmeceutical Science, Daegu Haany University, <sup>2</sup>Institute of Technology, Herbnoori, <sup>3</sup>School of Food Science & Biotechnology / Food & Bio-Industry Research Institute, Kyungpook National University

## ABSTRACT

This study was designed to investigate the effects of extracts from *Cynanchi Radix* of antioxidant effect and antimicrobial effect. Antioxidant effect was assessed by the ABTS radical scavenging ability. ABTS radical cation scavenging ability of water extracts from *Cynanchi Radix* showed over 63% and 70% ethanol extract showed over 53% at a 1000 µg/ml concentration. Accordingly, ABTS radical scavenging ability was far better water extract from *Cynanchi Radix* than 70% ethanol extracts. The water extracts from *Cynanchi Radix* exhibited antimicrobial activity against *Staphylococcus epidermidis*, *Escherichia coli*, *Propionibacterium acnes* and *Streptococcus aureus* at a 1 mg/ml. The 70% ethanol extracts exhibited anti-microbial activities at *Staphylococcus epidermidis*.

## RESULTS

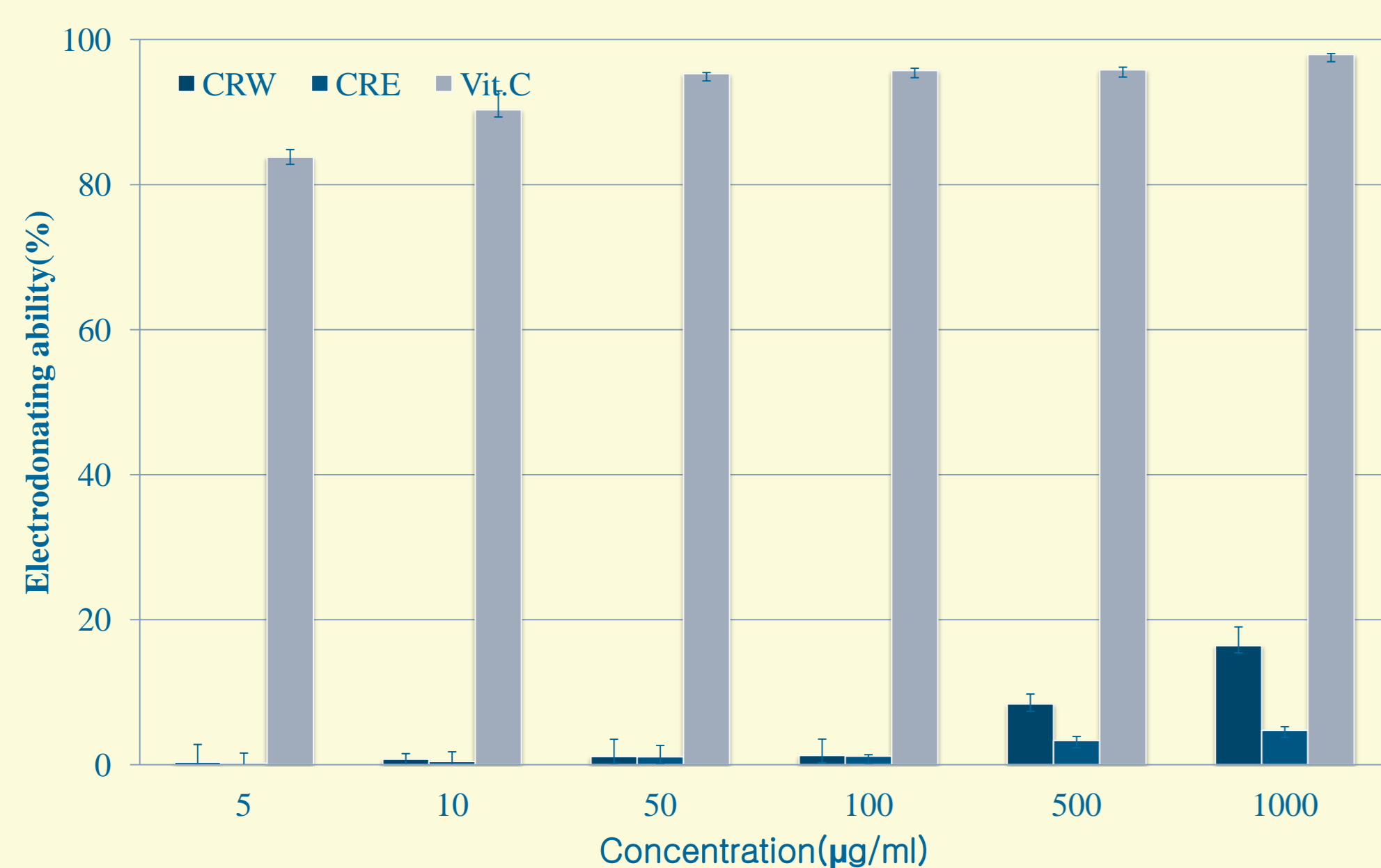


Fig 3. Electron donating ability of extract from *Cynanchi Radix* extract.

■ CRW : Water extract from *Cynanchi Radix*  
 ■ CRE : 70% Ethanol extract from *Cynanchi Radix*  
 ■ Vit.C : Ascorbic acid

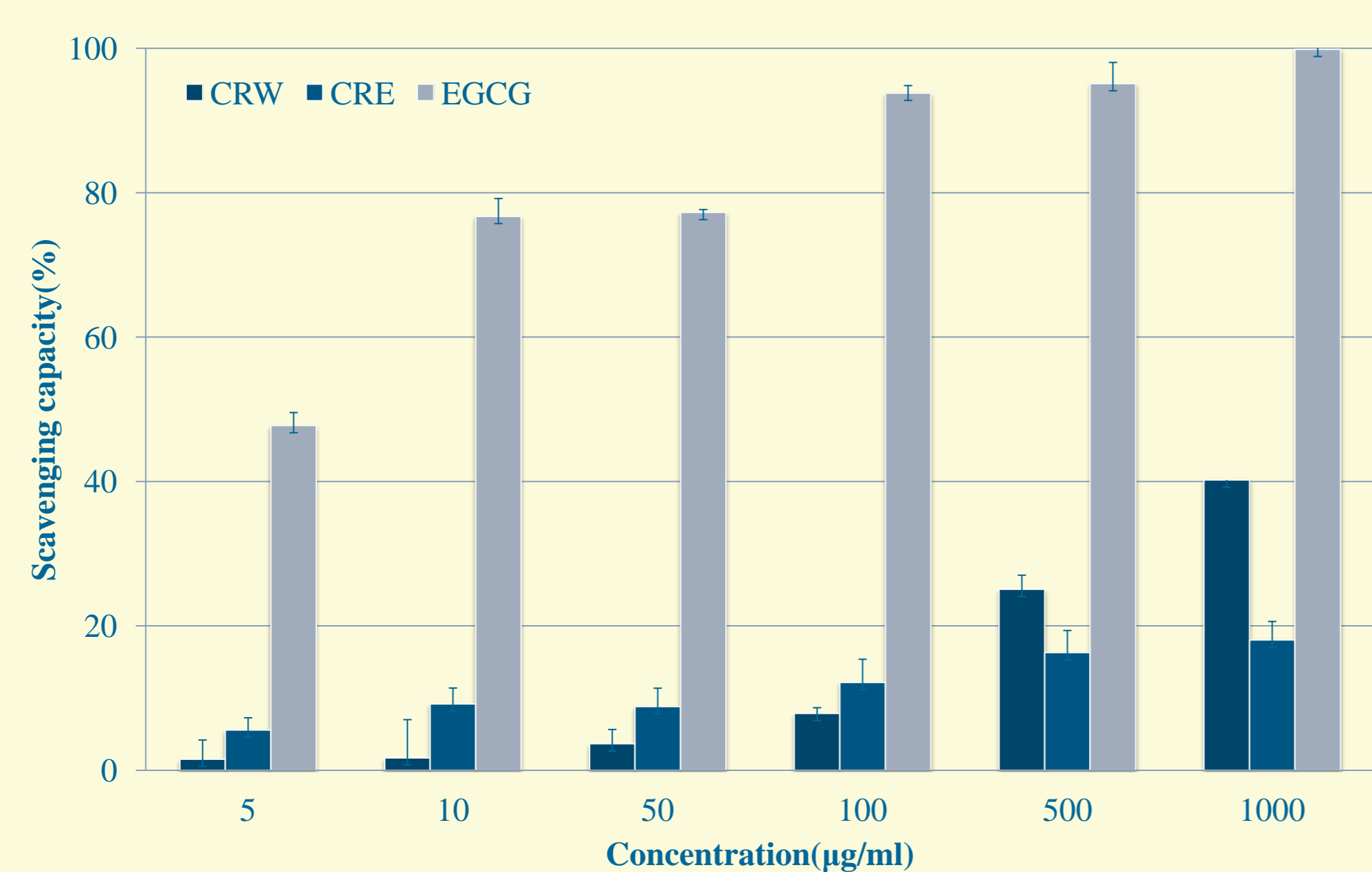


Fig 4. Superroxide anion radical of from *Cynanchi Radix* extract.

■ CRW : Water extract from *Cynanchi Radix*  
 ■ CRE : 70% Ethanol extract from *Cynanchi Radix*  
 ■ Vit.C : Ascorbic acid

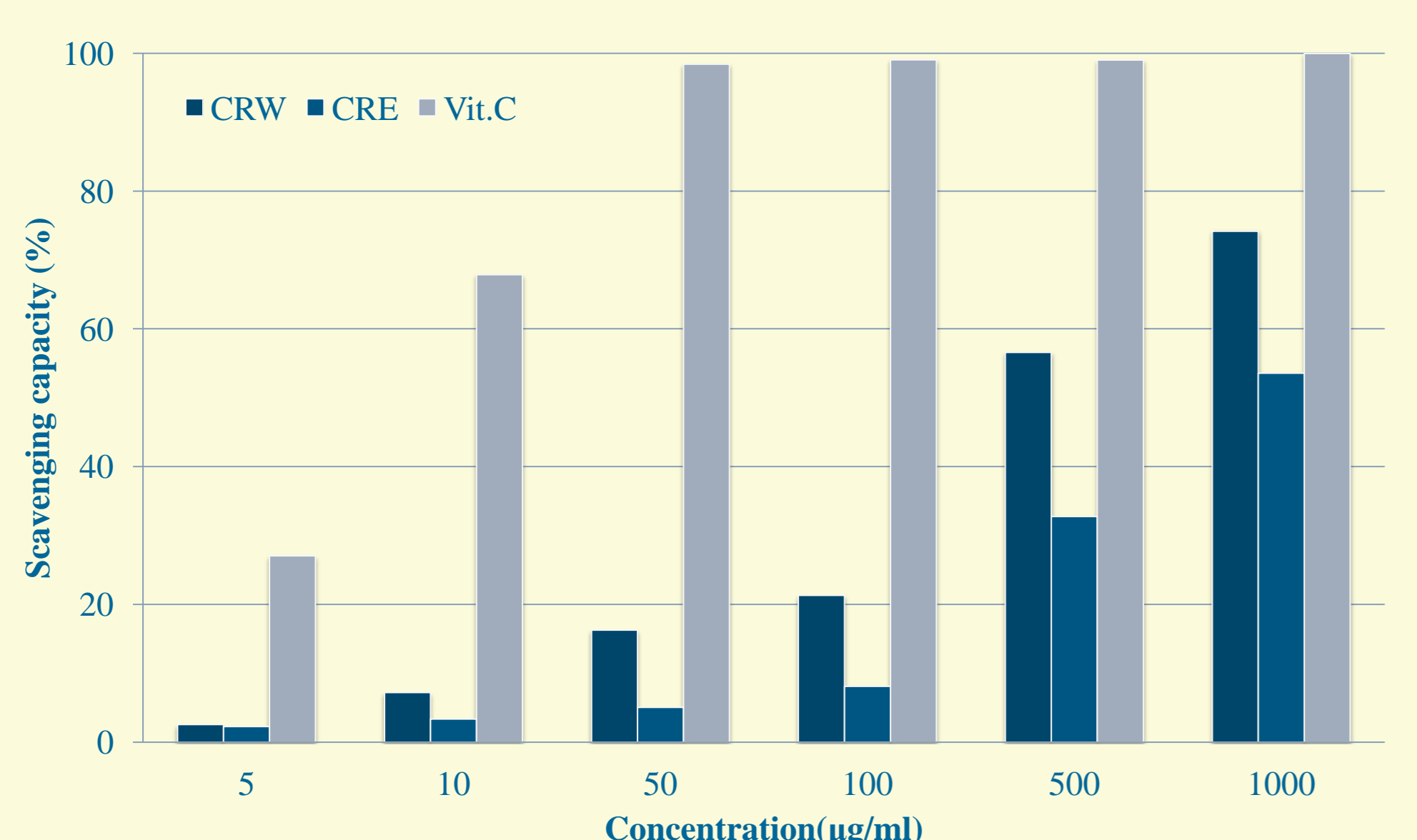


Fig 5. ABTS+ cation radical scavenging activity of extract from *Cynanchi Radix*.

■ CRW : Water extract from *Cynanchi Radix*  
 ■ CRE : 70% Ethanol extract from *Cynanchi Radix*  
 ■ EGCG : Epigallocatechingallate

## MATERIALS&METHODS

1. Electron donating ability (EDA)  
: measured by Bios<sup>1</sup>) method
2. Scavenging rate  
: measured by ABTS+ cation decolorization<sup>2</sup>) assay
3. Superoxide anion radical scavenging inhibition effect  
: measured by nitroblue tetrazolium(NBT)<sup>3</sup>)
4. Clear zone  
: Paper disc<sup>4</sup>) method

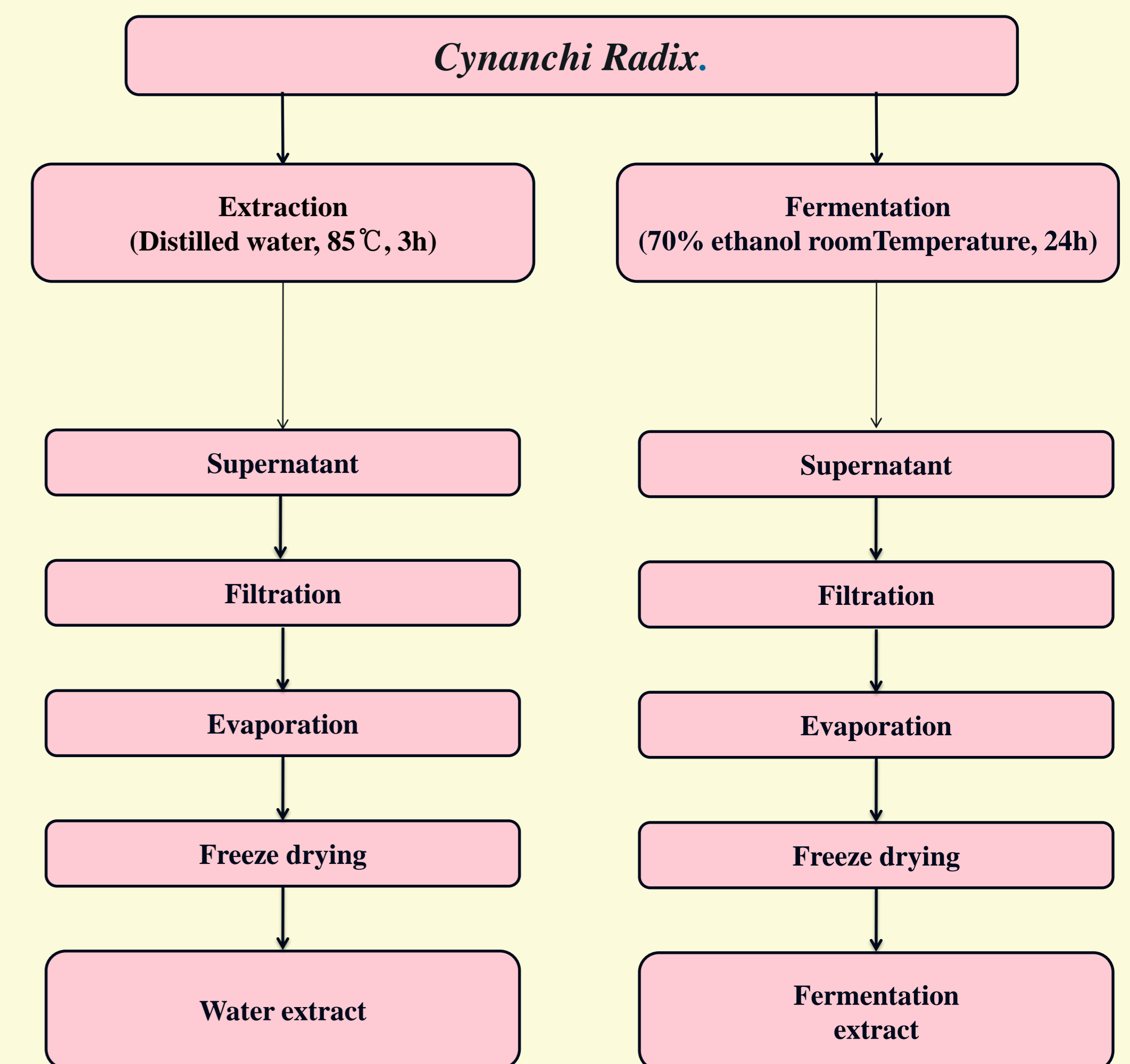


Fig 1. The procedure for extraction from *Cynanchi Radix*.

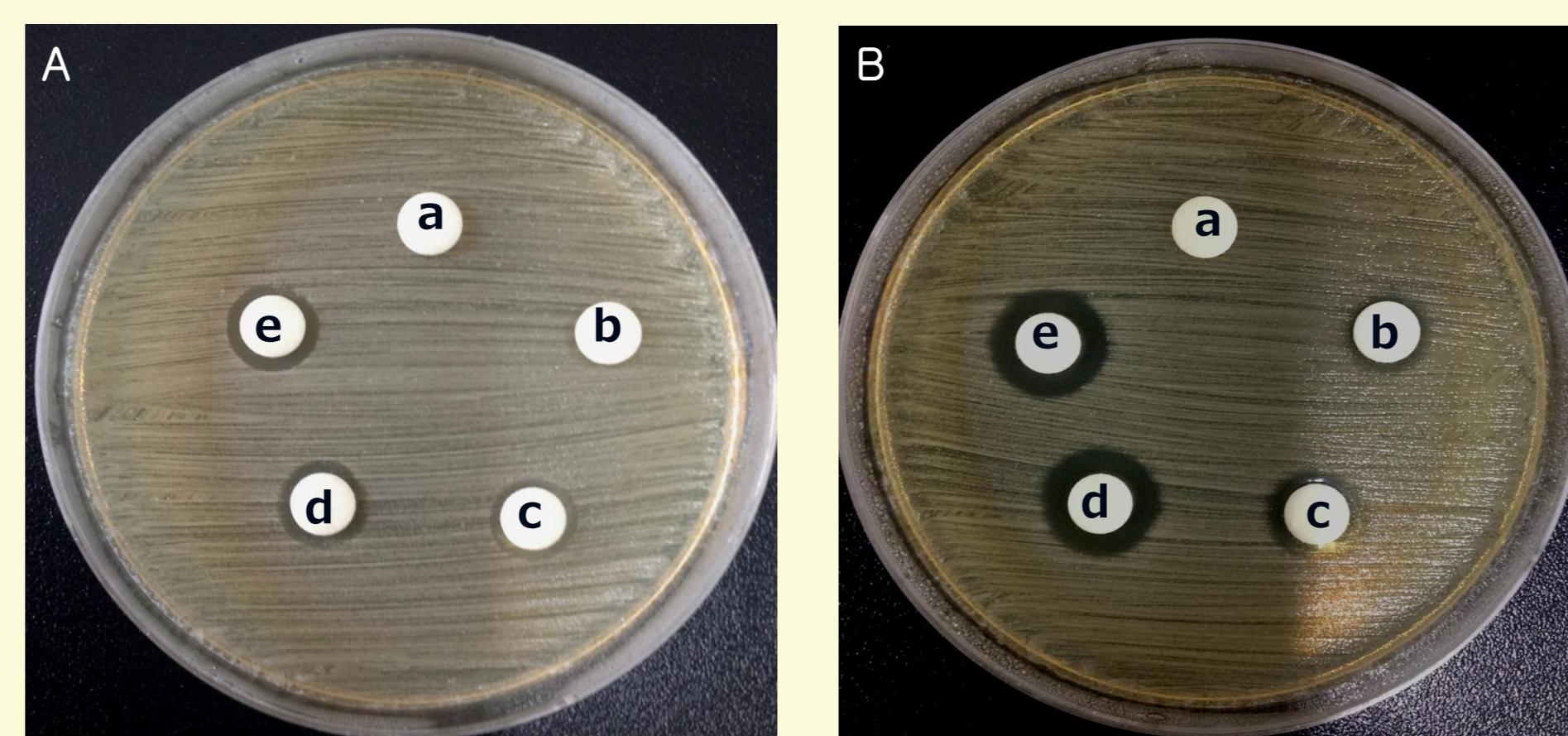


Fig 5. Antimicrobial activity from *Cynanchi Radix* extract on *Propionibacterium acnes*  
 A : Water extract from *Cynanchi Radix*  
 B : 70% Ethanol extract from *Cynanchi Radix*

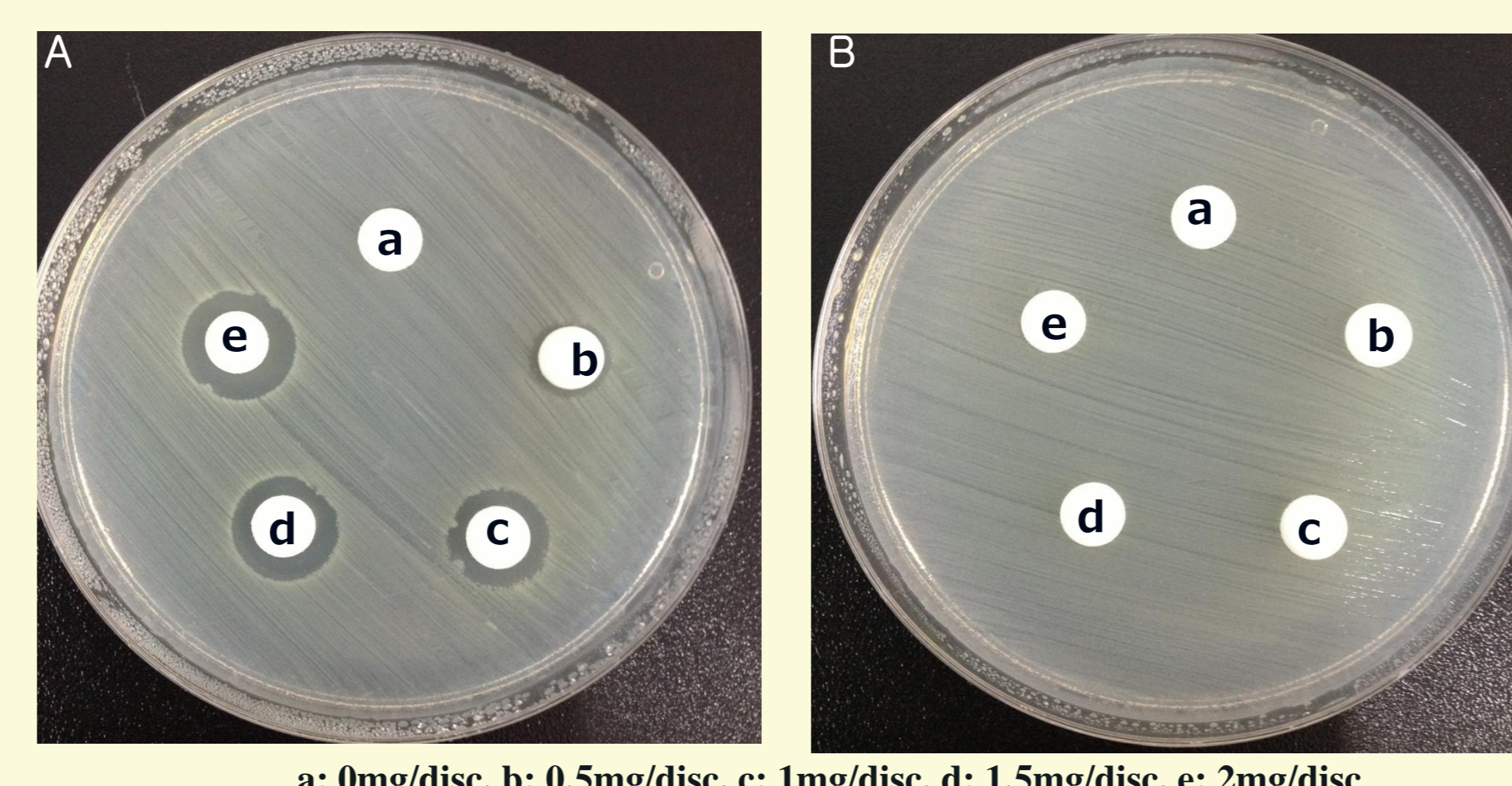


Fig 6. Antimicrobial activity from *Cynanchi Radix* extract on *Staphylococcus epidermidis*  
 A : Water extract from *Cynanchi Radix*  
 B : 70% Ethanol extract from *Cynanchi Radix*

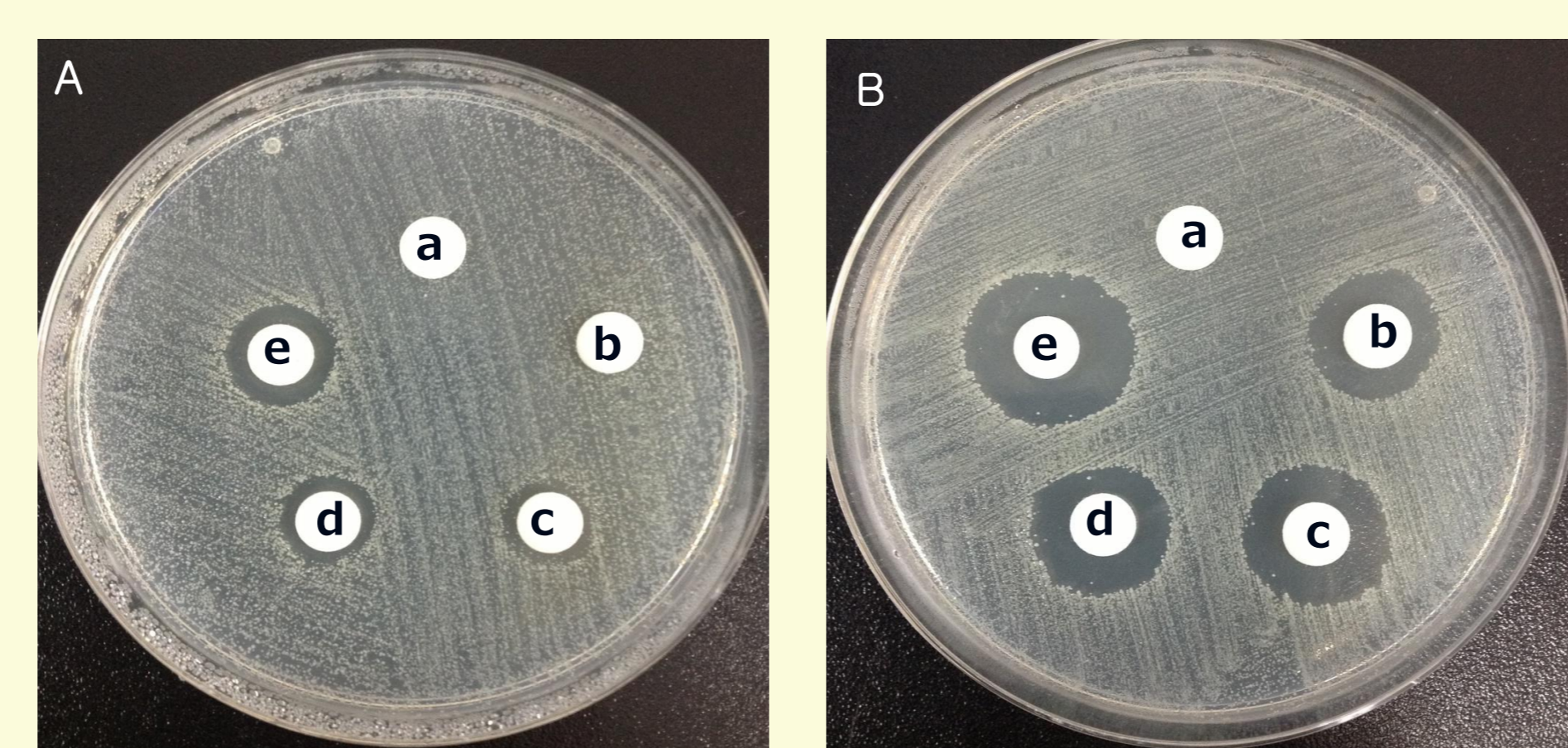


Fig 7. Antimicrobial activity from *Cynanchi Radix* extract on *Escherichia coli*  
 A : Water extract from *Cynanchi Radix*  
 B : 70% Ethanol extract from *Cynanchi Radix*

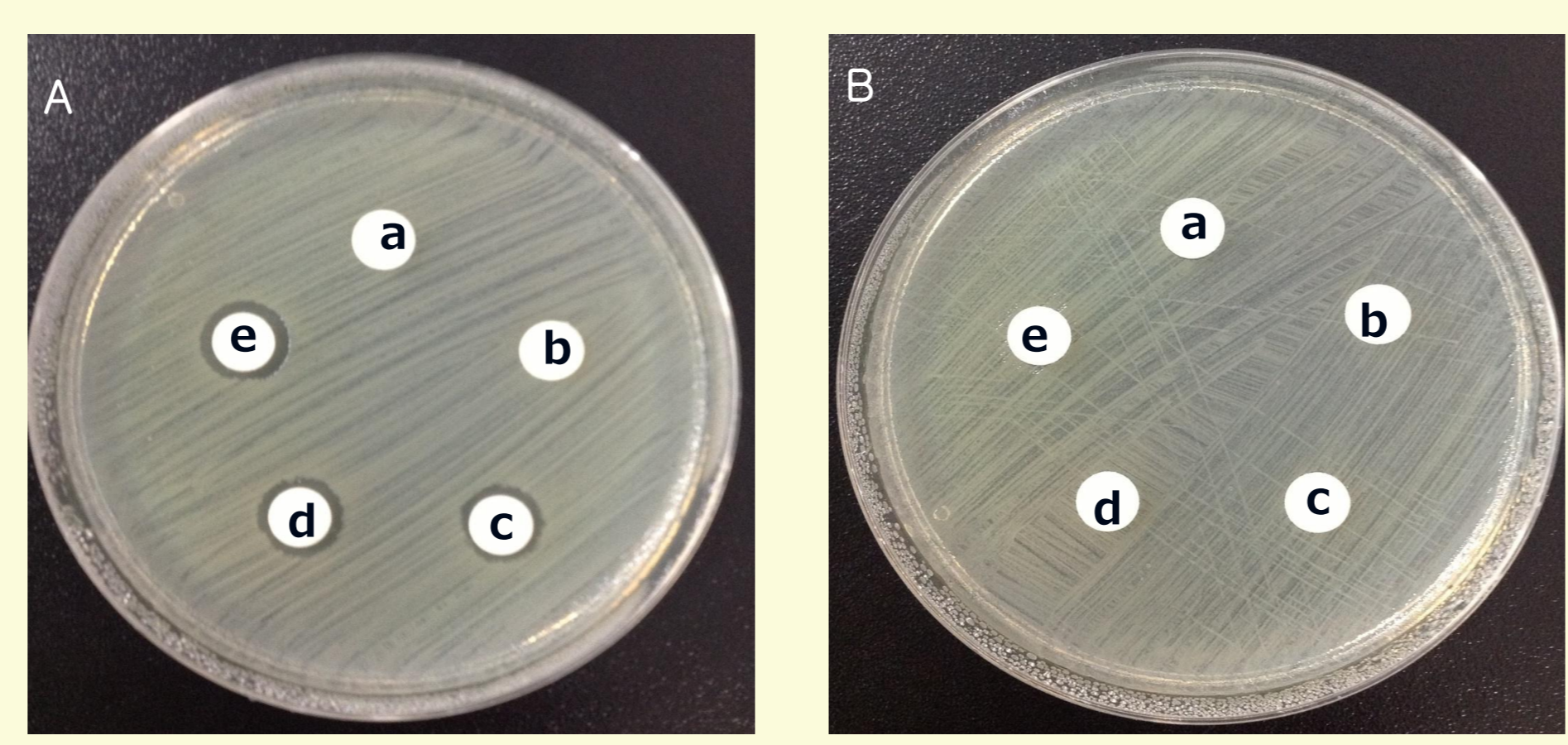


Fig 8. Antimicrobial activity from *Cynanchi Radix* extract on *Staphylococcus aureus*  
 A : Water extract from *Cynanchi Radix*  
 B : 70% Ethanol extract from *Cynanchi Radix*

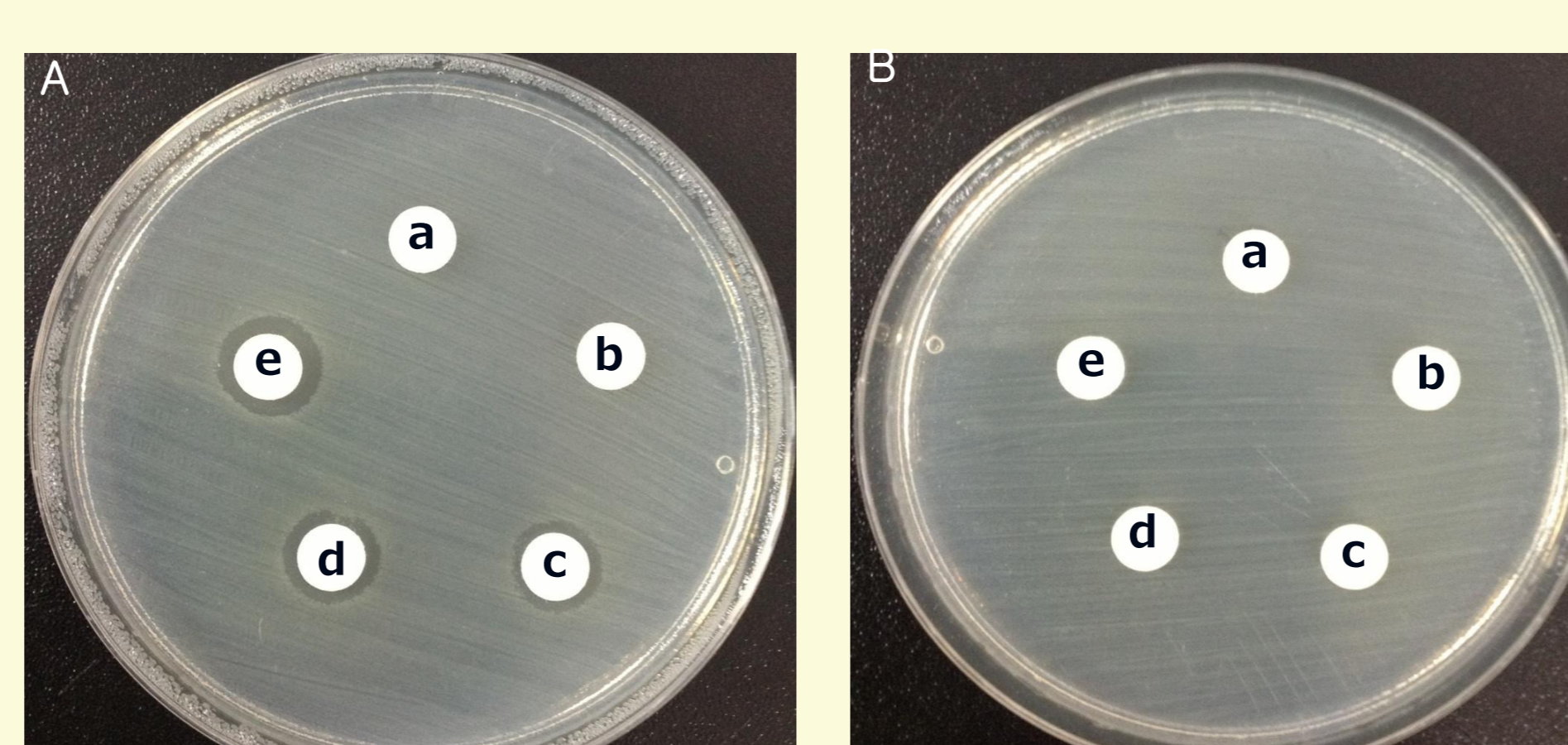


Fig 9. Antimicrobial activity from *Cynanchi Radix* extract on *Enterobacter cloacae subsp cloacae*  
 A : Water extract from *Cynanchi Radix*  
 B : 70% Ethanol extract from *Cynanchi Radix*

Table 1. Antimicrobial activity of *Cynanchi Radix* extract on several microorganisms.

		Extract of water (mg/disc)	Extract of 70% Ethanol (mg/disc)
<i>Propionibacterium acnes</i> KCTC 3065	Control	- <sup>a</sup>	-
	0.5	0.40 <sup>b</sup>	1.50±0.10
	1	1.43	2.52±0.41
	1.5	1.80	3.65±0.19
<i>Staphylococcus epidermidis</i> KCTC 1917	Control	-	-
	0.5	1.30±0.17	-
	1	2.71	-
	1.5	2.99	-
<i>Escherichia coli</i> KCTC 1039	Control	-	-
	0.5	-	4.63±0.71
	1	2.57±0.19	5.77±0.46
	1.5	2.98±0.15	5.7±0.98
<i>Staphylococcus aureus</i> KCTC 1916	Control	-	-
	0.5	-	-
	1	1.65±0.38	-
	1.5	1.78±0.10	-
<i>Enterobacter cloacae subsp cloacae</i> KCTC 2361	Control	-	-
	0.5	1.95±0.55	-
	1	2.0±0.34	-
	1.5	1.89±0.10	-
	2	2.68±0.32	-

a: no clear, b: clear zone

## CONCLUSION

1. ABTS radical cation scavenging ability of water extracts from *Cynanchi Radix* showed over 74% and 70% ethanol extract showed over 53% at a 1000 µg/ml concentration
2. The water extracts from *Cynanchi Radix* exhibited antimicrobial activity against *Staphylococcus epidermidis*, *Escherichia coli*, *Propionibacterium acnes* and *Streptococcus aureus* at a 0.5mg/disc. The 70% ethanol extracts exhibited anti-microbial activities at *Staphylococcus epidermidis*.

## REFERENCE

- 1) Blois MS. : *Nature.*, 26, 1199-1200 (1958).
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- 3) Marklund S, Marklund G. *Eur.J.Biochem.*, 47, 469-474 (1975).
- 4) Corner DE, Beuchat LR. Sensitivity of heat-stressed yeasts to essential oils of plants. *Appl. Environ. Microbiol.* 1984;47(2):229-233.