

Verification on Cosmeceutical Activities of the Solvent Fractions from *Rhoeo spathacea*.

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Abstract

This study investigated about the antioxidant and whitening activity of the solvent fraction from 70% acetone extract of *Rhoeo spathacea*. Fraction layer is ethyl acetate(RSE), buthyl alcohol(RSB), water(RSW) using three types of solvent used in the experiment were frozen. The electron donating ability of RSE, RSB, RSW showed each over 39%, 55%, 48% at a 1000 µg/ml concentration. The superoxide dismutase (SOD)-like ability of RSE dose-dependently increased from 13% to 21%, although the effect was not significant. ABTS+ cation radical scavenging activity of all of the *Rhoeo spathacea* three fractions showed over 90% at a 1000 µg/ml concentration. Superoxide anion radical scavenging ability of RSE, RSB, RSH showed each over 78%, 99%, 93% at a 1000 µg/ml concentration. The tyrosinase inhibition effect of RSE dose-dependently increased from 4% to 23%. Taken together, *Rhoeo spathacea* solvent fractions showed the significant antioxidative, whitening and as functional additives.

Materials & Methods

1. Electron donating ability (EDA)

: measured by Blois¹⁾ method.

2. Superoxide dismutase (SOD)-like activity

: measured by Marklund²⁾ method.

3. ABTS+ cation radical scavenging activity

: measured by ABTS+ cation decolorization³⁾ assay

4. Mushroom tyrosinase inhibition effect

: measured by Yagi⁴⁾ method.

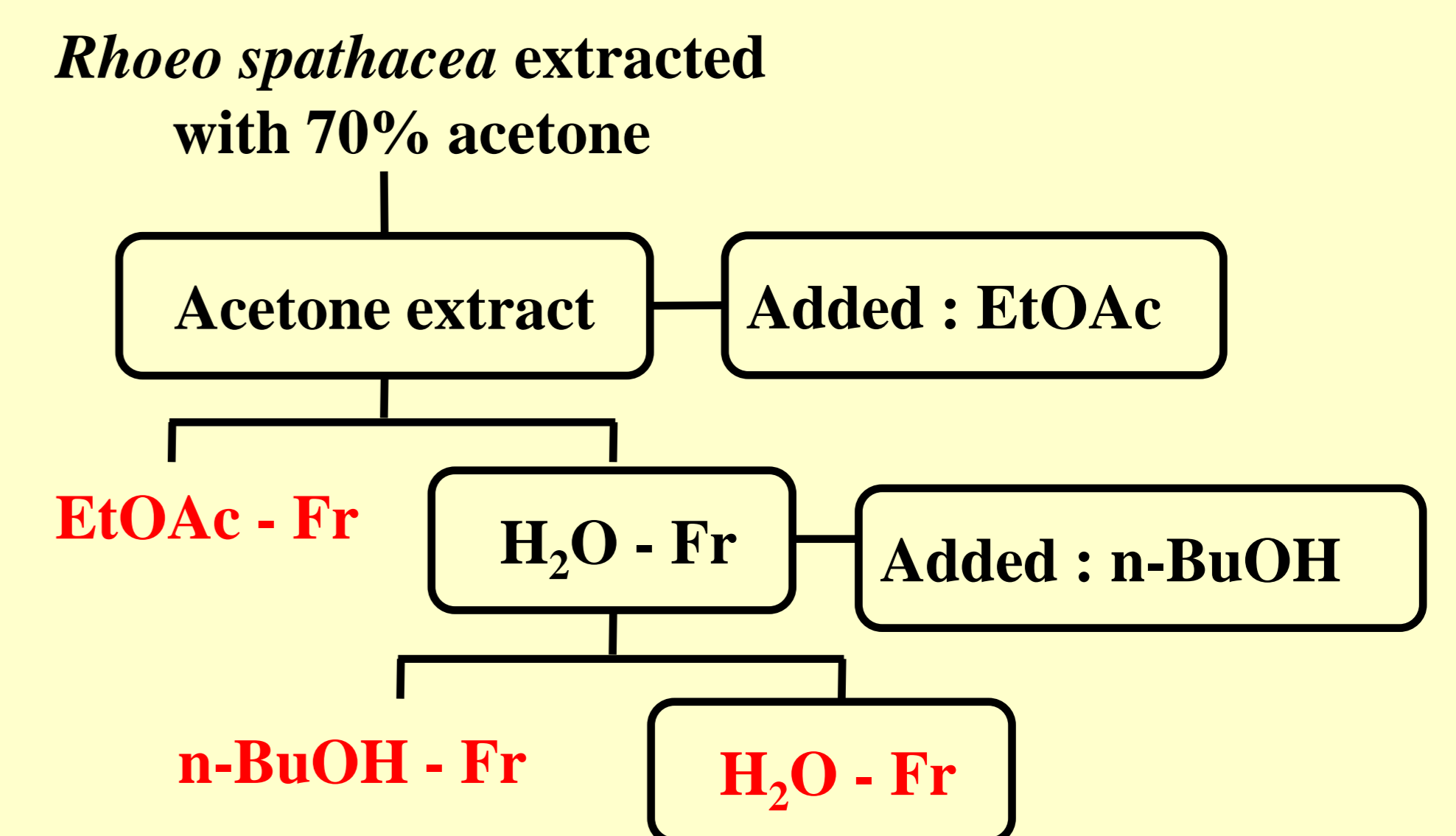


Fig. 1. The procedure of solvent fractions from *Rhoeo spathacea* extracts.

Results

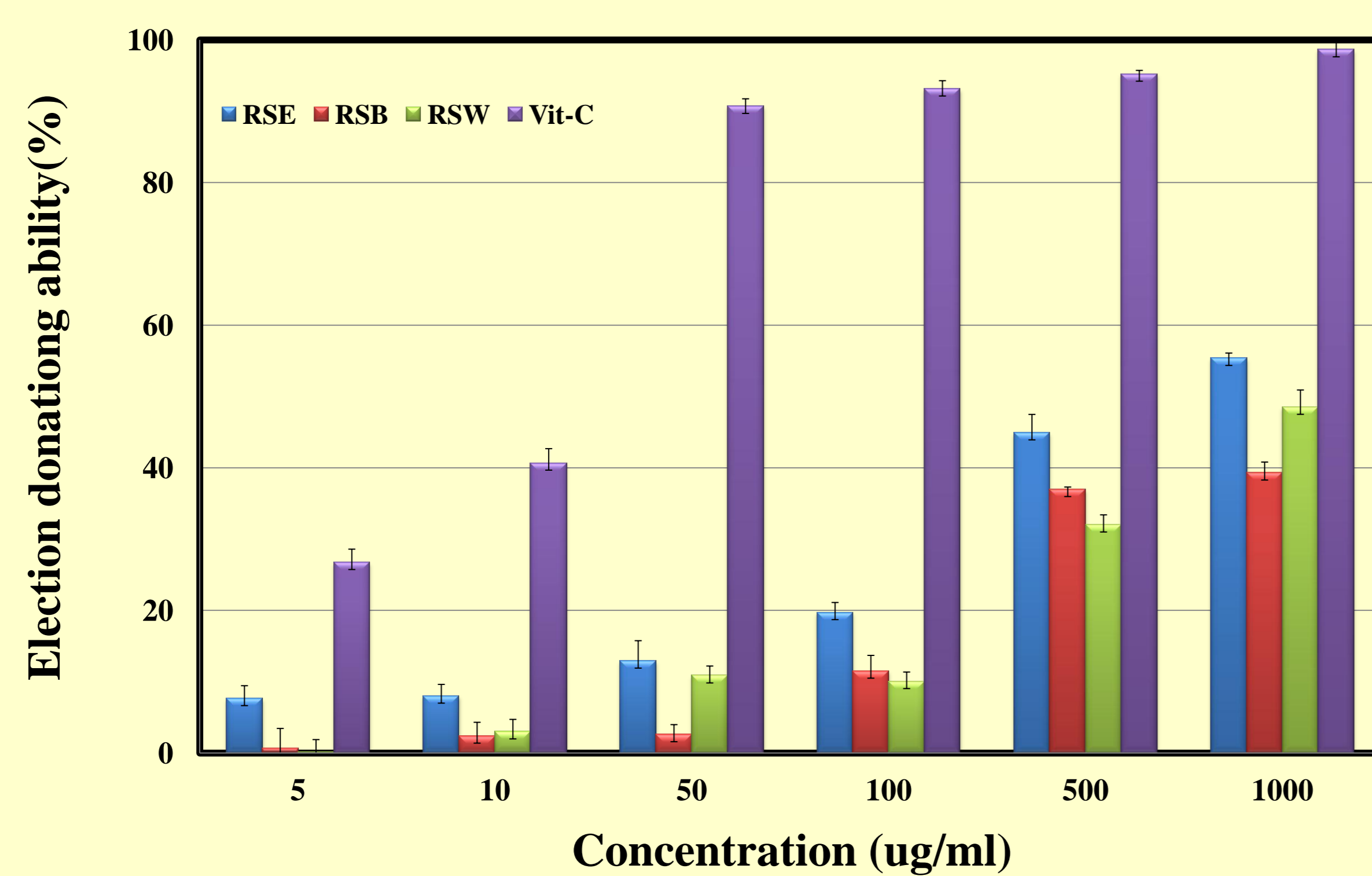


Fig. 1. The Electron donating ability of solvent fractions from *Rhoeo spathacea*.

■ RSE : Ethyl acetate layer of *Rhoeo spathacea* extracted with acetone.
 ■ RSB : n-Butyl alcohol of *Rhoeo spathacea* extracted with acetone.
 ■ RSW : Water layer of *Rhoeo spathacea* extracted with acetone.
 ■ Vit.C : L- ascorbic acid.
 Result are means ± S.D. of triplicate data.

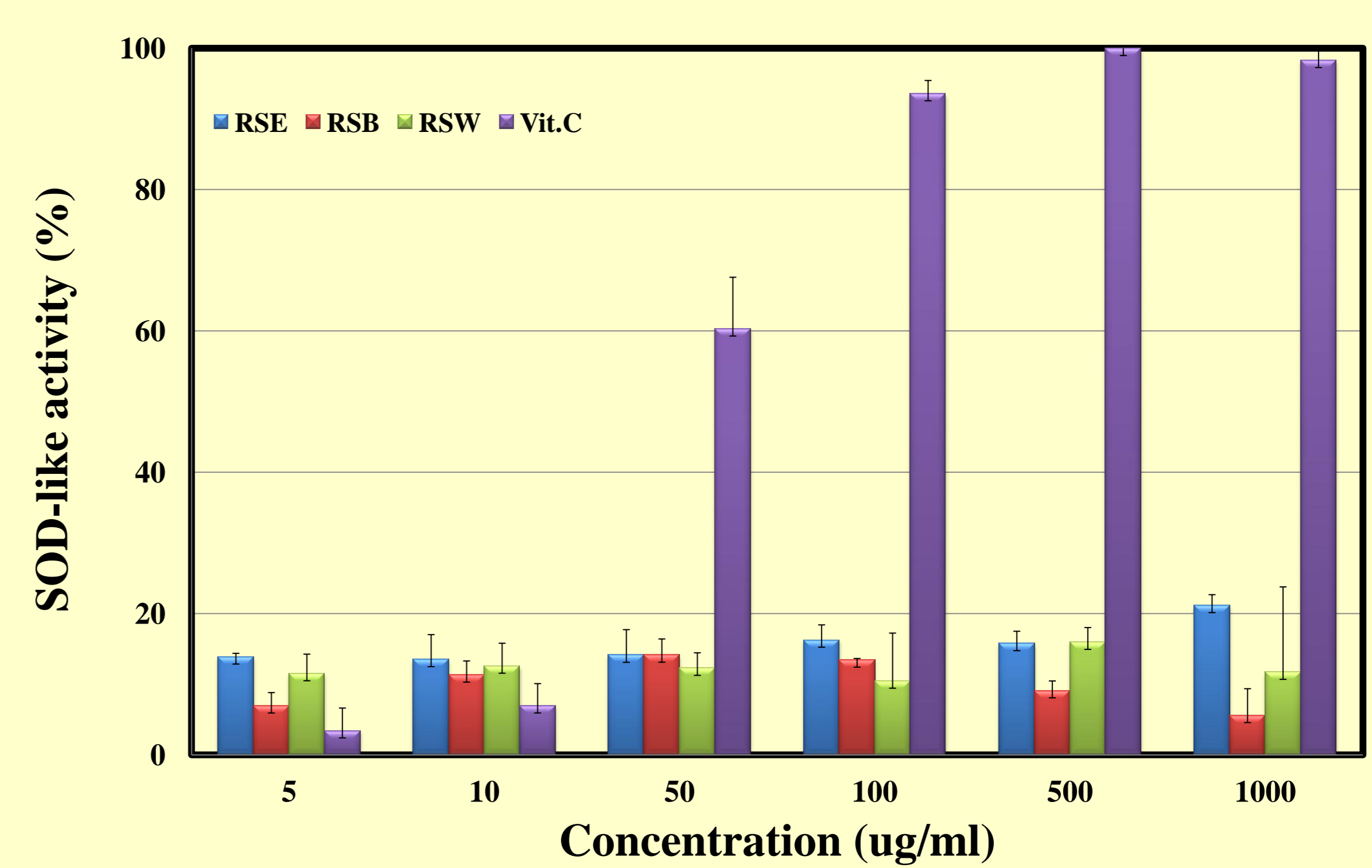


Fig. 2. SOD-like ability of solvent fractions from *Rhoeo spathacea*.

■ RSE : Ethyl acetate layer of *Rhoeo spathacea* extracted with acetone.
 ■ RSB : n-Butyl alcohol of *Rhoeo spathacea* extracted with acetone.
 ■ RSW : Water layer of *Rhoeo spathacea* extracted with acetone.
 ■ Vit.C : L- ascorbic acid.
 Result are means ± S.D. of triplicate data.

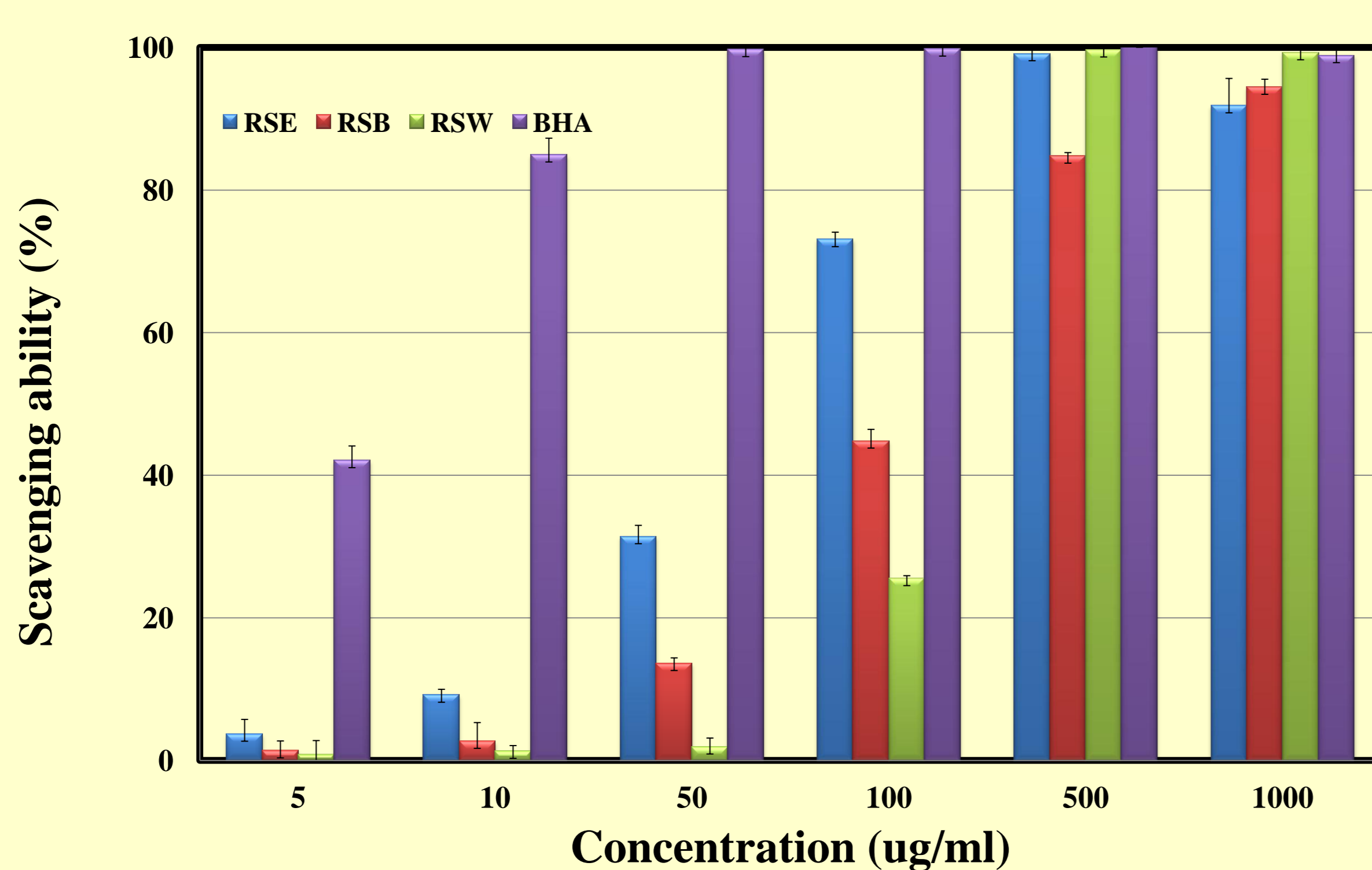


Fig. 3. ABTS+ cation radical scavenging activity of solvent fractions from *Rhoeo spathacea*.

■ RSE : Ethyl acetate layer of *Rhoeo spathacea* extracted with acetone.
 ■ RSB : n-Butyl alcohol of *Rhoeo spathacea* extracted with acetone.
 ■ RSW : Water layer of *Rhoeo spathacea* extracted with acetone.
 ■ BHA : Butylated Hydroxy Anisole.
 Result are means ± S.D. of triplicate data.

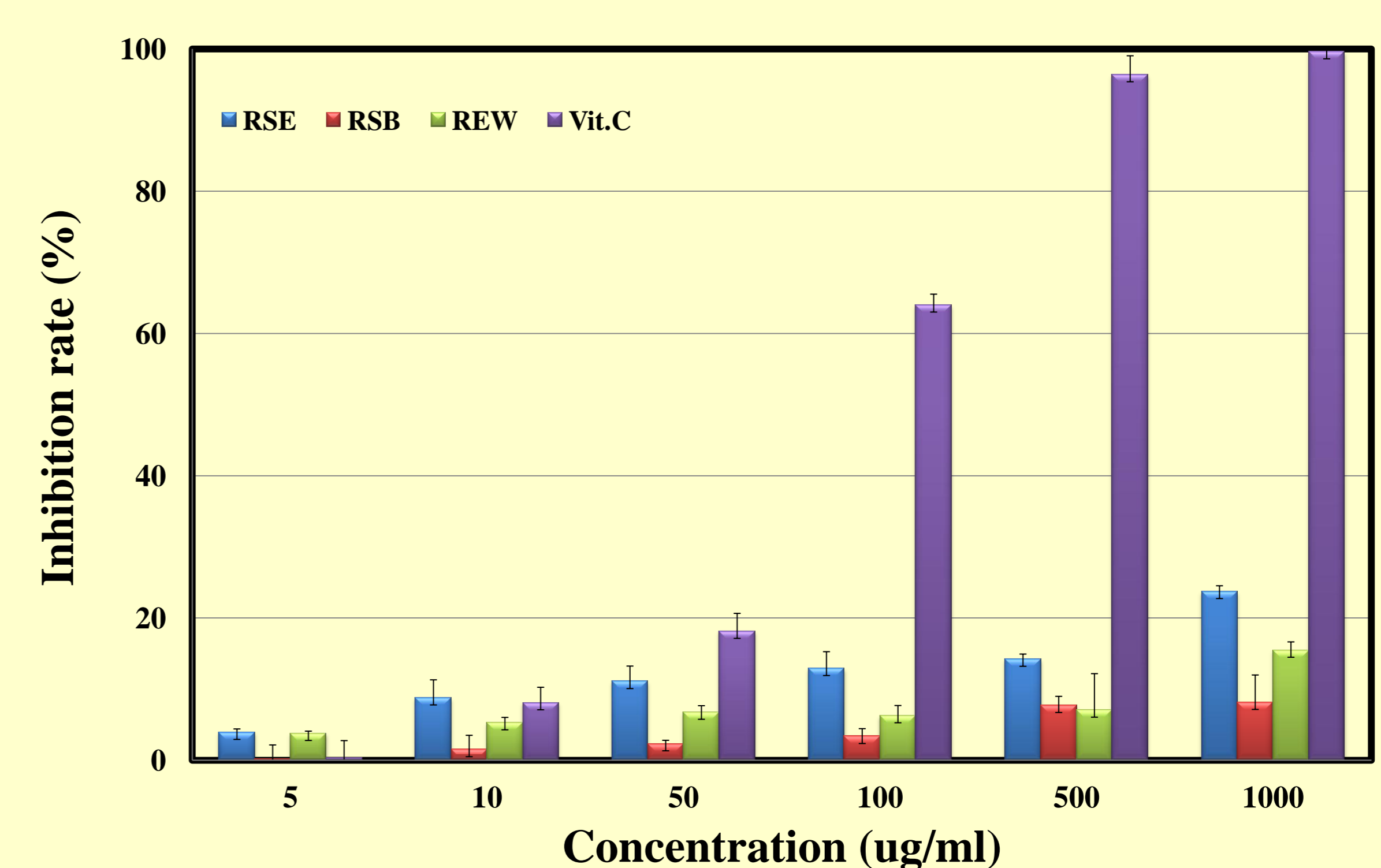


Fig. 4. The Inhibition rate of solvent fractions from *Rhoeo spathacea* extracts on tyrosinase.

■ RSE : Ethyl acetate layer of *Rhoeo spathacea* extracted with acetone.
 ■ RSB : n-Butyl alcohol of *Rhoeo spathacea* extracted with acetone.
 ■ RSW : Water layer of *Rhoeo spathacea* extracted with acetone.
 ■ Vit.C : L- ascorbic acid.
 Result are means ± S.D. of triplicate data.

Conclusion

1. Antioxidant activities were evaluated electron donating, ABTS+ cation radical scavenging activity and superoxide dismutase ability. Overall, the antioxidant activities of EtOAc fraction showed a higher than those of BuOH, H₂O fractions.
2. Tyrosinase inhibition activity related to the skin-whitening was EtOAc fraction showed about 23% at a 1000µg/ml. The BuOH fraction showed about 8% at a 1000µg/ml. The H₂O fractions showed about 15% at 1000µg/ml.

Reference

- 1) Blois : *Nature.*, 26, 1199-1200 (1958).
- 2) Marklund S, Marklund G. *Eur. J. Biochem.*, 47, 469-474 (1974).
- 3) Roberta R, Nicoletta P, Anna P, Ananth P, Min Y and Catherine RE, 26(9/19), 1231-1237
- 4) J. Biol. Chem , 245:4053-4057(1970)