

고압 균질 공정을 통한 비타민 B1 유도체 (Thiamine Dilauryl Sulfate:TDS)의  
항진균 활성 증진

Enhancement of Antifungal Activities of Thiamine Dilauryl Sulfate (TDS) by  
high pressure homogenization process

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### Objectives

This study was to evaluate the effects of nanoparticles on antifungal activities of Thiamine Di-lauryl Sulfate (TDS) through high pressure homogenization process.

### Materials and Methods

Thiamine Di-lauryl Sulfate (TDS) was dispersed by high pressure homogenization. Antifungal activity was measured about *Colletotrichum gloeosporioides* for hypha growth inhibition activity of powder and nanoparticle of thiamine di-lauryl sulfate (TDS).

### Results

TDS was well dispersed by high pressure homogenization as 328.6 nm diameter to increase stability in water solution. The turbidity of nanoparticles in water solution was increased up to 40% concentration of TDS in water solution compared to the general TDS crude, and nanoparticles in water solution was showed the highest turbidity as O.D. value of 3.87 nm.

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100 ppm of nanoparticles in water solution showed growth inhibition activity higher than about 80% compared to the control group against *Colletotrichum gloeosporioides*. TDS nanoparticle was well dispersed in water solution, results in improving the antifungal activities against anthracnose in pepper.

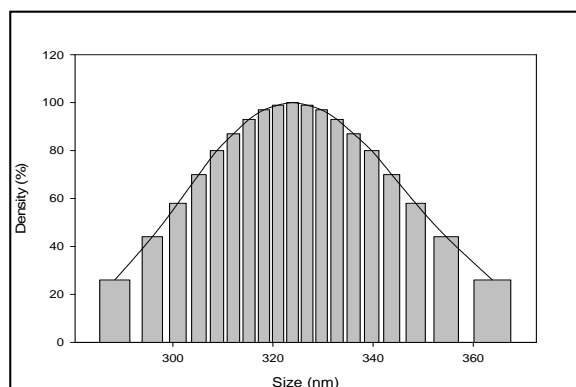


Fig. 1. Distribution of TDS nanoparticle solution using dynamic light scattering (DLS).

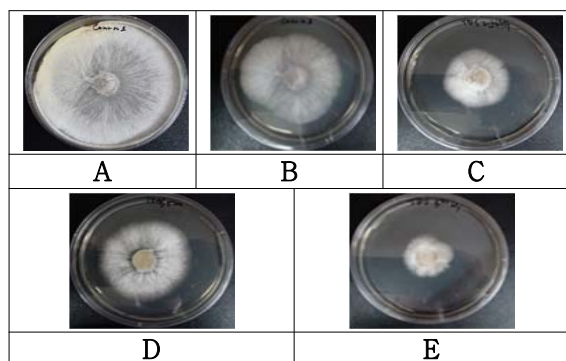


Fig. 3. Antifungal activity of TDS nanoparticle solution with different concentrations from *Colletotrichum gloeosporioides*.

- A : negative control, no treated
- B : TDS powder 50 mg
- C : TDS powder 100 mg
- D : TDS nanoparticle 50 ppm (mg/ℓ)
- E : TDS nanoparticle 100 ppm (mg/ℓ)

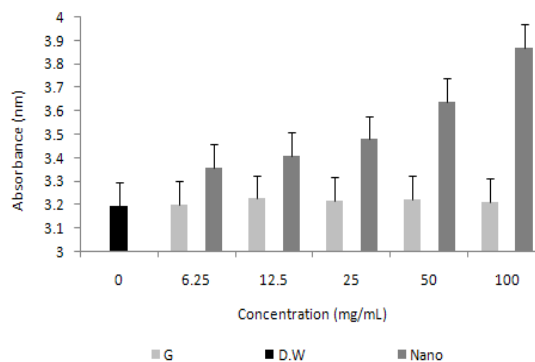


Fig. 2. Turbidity of TDS nanoparticle solution with different concentrations.

G: general TDS crude

D.W: distilled water

Nano: supernatant of TDS nanoparticle solution

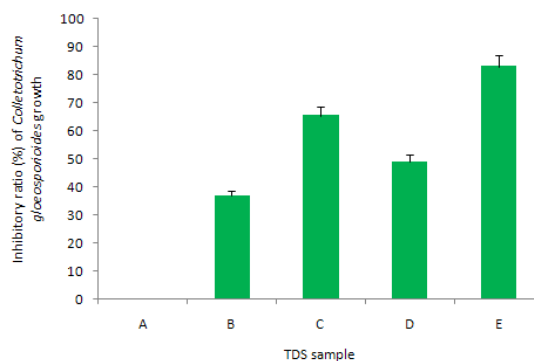


Fig. 4. Inhibitory ratio of *Colletotrichum gloeosporioides* growth of TDS nanoparticle solution with different concentrations.

- A : negative control, no treated
- B : TDS powder 50 mg
- C : TDS powder 100 mg
- D : TDS nanoparticle 50 ppm (mg/ℓ)
- E : TDS nanoparticle 100 ppm (mg/ℓ)

## References

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