

PENGARUH PRODUK REAKSI MAILLARD (MRP) GLUKOSA – GLISIN TERHADAP PERTUMBUHAN
Salmonella typhimurium

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RINGKASAN

Produk Reaksi Maillard (MRP) merupakan hasil reaksi pencoklatan non enzimatis antara gula reduksi dengan gugus asam amino. Produk ini memiliki aktifitas antibakteri dan antioksidan. MRP dapat dibuat dari glukosa-glisin dengan pemanasan 100 °C selama 5 jam. MRP ini terbukti efektif menghambat pertumbuhan bakteri dalam nira tebu dan bakteri patogen *E.coli*. Namun belum ada laporan mengenai pengaruh MRP ini terhadap pertumbuhan bakteri patogen lain seperti *Salmonella typhimurium* yang memiliki sifat patogen mirip dengan *E.coli*, sehingga pada penelitian ini diteliti pengaruh MRP jenis ini terhadap *Salmonella typhimurium*.

Produk reaksi Maillard dibuat dengan mereaksikan glukosa dengan glisin dengan perbandingan mol 1:1 dalam 250 mL air pada pH 7 kemudian di refluks pada suhu 100 °C selama 5 jam. Produk hasil reaksi dikeringkan dengan alat pengering vakum pada tekanan 61 cmHg. Uji antibakteri menggunakan metode cakram kertas berdiameter 5,5 mm dengan variasi konsentrasi MRP 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, dan 120 mg/mL.

Berdasarkan pengukuran zona penghambatan, MRP memberikan efek terendah terhadap pertumbuhan *Salmonella typhimurium* pada konsentrasi 60 mg/mL. Sebagai pembanding, *Escherichia coli* dapat dihambat oleh MRP ini pada konsentrasi awal 80 mg/mL dan efektifitas hambatan MRP ini dengan ampicillin adalah 600:1. Hasil penelitian menunjukkan bahwa MRP sistem model glukosa-glisin dengan pemanasan 100 °C selama 5 jam dapat menghambat pertumbuhan *Salmonella typhimurium*.

SUMMARY

Maillard Reaction Product (MRP) is nonenzymatic browning reaction which can be produced by reaction between reducing sugar and amino acid groups. MRP have activity as an antibacteria and antioxidative. MRP can be produced by heating the glucose and glycine mixture at 100 °C for 5 hours. This MRP inhibit the growth of bacteria in sugar cane and *E. coli*. However, there have been no reports about the inhibition effect of this MRP to the growth of another pathogenic bacteria especially *Salmonella typhimurium*.

Hence, MRP was produced by heating the mixture of (1:1) mol glucose-glycine in 250 mL aquades at pH 7. This mixture was reflux at 100 °C for 5 hours. This reaction product was dried using vacuum rotavapor at 61 cmHg. The antibacterial effects was examined using paper disc method with 5,5 mm in diameter. The MRP concentration that have been used: 10, 20,30, 40, 50, 60, 70, 80, 90, 100, 110, 120 mg/mL.

According to the inhibition zone tests, this MRP giving the lowest inhibition to *Salmonella typhimurium* growth at 60 mg/mL. As a comparison, the initial concentration of this MRP to the growth of *E.coli* is 80 mg/mL and the inhibition effectiveness of this MRP to ampicillin is 600:1. The studies have revealed that MRP using glucose-glycine model system could inhibit the growth of *Salmonella typhimurium*.

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