

PERBANDINGAN PERTUMBUHAN *Streptococcus mutans* PADA MEDIA
AGAR DARAH DONOR PRC (*Packed Red Cells*) KEDALUWARSA DAN
MEDIA AGAR DARAH DOMBA

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ABSTRAK

Latar Belakang: *Streptococcus mutans* merupakan bakteri Gram positif penyebab utama karies gigi yang membutuhkan media diperkaya seperti *Blood Agar Plate* (BAP) untuk pertumbuhannya. Darah manusia memiliki kemiripan kandungan nutrisi dengan darah domba sehingga berpotensi digunakan sebagai alternatif bahan media BAP. Stok darah donor PRC di Palang Merah Indonesia (PMI) kerap mencapai batas masa simpan tanpa terpakai dan akhirnya harus dimusnahkan sebagai limbah biologis. Pemanfaatan PRC donor kedaluwarsa dari PMI sebagai bahan alternatif pembuatan media BAP berpotensi mendukung pertumbuhan *Streptococcus mutans* sekaligus mengoptimalkan pengelolaan limbah biologis laboratorium.

Tujuan: Membandingkan pertumbuhan *Streptococcus mutans* pada media BAP berbahan PRC donor manusia kedaluwarsa dan media BAP darah domba berdasarkan rerata diameter koloni dan karakteristik morfologi koloni secara makroskopis dan mikroskopis.

Metode : Penelitian eksperimental *Post Test Only With Control Group Design* menggunakan *S. mutans* ATCC 25175. Inokulasi dilakukan pada 16 plate BAP PRC kedaluwarsa (golongan darah A rhesus positif) dan 16 plate BAP darah domba 5%, diinkubasi 37°C selama 48 jam. Diameter koloni terbesar diukur dengan jangka sorong (presisi 0,01 mm) secara purposive sampling. Analisis statistik menggunakan uji *Shapiro-Wilk* dan *Independent Sample T-Test* ($\alpha = 0,05$).

Hasil: Rerata diameter koloni BAP darah domba (1,55 mm) lebih besar dibanding BAP PRC kedaluwarsa (1,51 mm), namun tidak bermakna ($p = 0,253$). Morfologi kedua media serupa, namun berbeda pada pola hemolisis: BAP PRC menunjukkan gamma dan BAP darah domba alfa lemah, sesuai sifat alamiah *S. mutans*.

Kesimpulan: Tidak terdapat perbedaan bermakna diameter koloni antara kedua media ($p = 0,253$). Media BAP PRC kedaluwarsa masih mampu mendukung pertumbuhan *Streptococcus mutans* dan berpotensi digunakan sebagai alternatif pengganti darah domba, namun belum seoptimal standar.

Kata kunci: *Streptococcus mutans*, *Blood Agar Plate*, PRC kedaluwarsa, darah domba

COMPARISON OF *Streptococcus mutans* GROWTH ON EXPIRED PACKED RED CELLS (PRC) DONOR BLOOD AGAR MEDIA AND SHEEP BLOOD AGAR MEDIA

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ABSTRACT

Background: *Streptococcus mutans* is a Gram-positive bacterium that is the primary cause of dental caries and requires enriched media such as Blood Agar Plates (BAP) for growth. Human blood has similar nutritional content to sheep blood, making it a potential alternative material for BAP media. The stock of PRC donor blood at the Indonesian Red Cross (PMI) often reaches its shelf life without being used and must be destroyed as biological waste. Using expired donor PRC from PMI as an alternative material for BAP media has the potential to support the growth of *Streptococcus mutans* while optimizing the management of laboratory biological waste.

Objective: To compare the growth of *Streptococcus mutans* on BAP media made from expired human donor PRC and sheep blood BAP media based on the average colony diameter and macroscopic and microscopic morphological characteristics of the colonies.

Methods: An experimental study using a post-test only control group design using *S. mutans* ATCC 25175. Inoculation was performed on 16 plates of expired BAP PRC (blood type A rhesus positive) and 16 plates of 5% sheep blood BAP, incubated at 37°C for 48 hours. The largest colony diameter was measured with a caliper (precision 0.01 mm) using purposive sampling. Statistical analysis used the Shapiro-Wilk test and independent sample t-test ($\alpha = 0.05$).

Results: The mean colony diameter of sheep blood BAP (1.55 mm) was larger than that of expired BAP PRC (1.51 mm), but not significantly ($p = 0.253$). The morphology of both media was similar, but differed in hemolysis patterns: BAP PRC showed gamma and BAP sheep blood showed weak alpha, consistent with the nature of *Streptococcus mutans*.

Conclusion: There was no significant difference in colony diameter between the two media ($p = 0.253$). Expired PRC BAP media can still support the growth of *S. mutans* and has the potential to be used as an alternative to sheep blood, but not as optimal as standard.

Keywords: *Streptococcus mutans*, Blood Agar Plate, Expired PRC, sheep blood.