

PERBANDINGAN PERTUMBUHAN KOLONI *Streptococcus pyogenes* PADA BAP BERBASIS LIMBAH DARAH PMI PASCAKEDALUWARSA 20 DAN 30 HARI

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ABSTRAK

Latar Belakang: Darah manusia pascakedaluwarsa merupakan limbah medis yang tidak dapat digunakan untuk transfusi, namun masih berpotensi dimanfaatkan sebagai bahan alternatif media kultur bakteri. Media *Blood Agar Plate* (BAP) umumnya menggunakan darah domba yang ketersediaannya terbatas dan relatif mahal, sehingga diperlukan alternatif yang lebih mudah diperoleh, ekonomis, dan tetap efektif.

Tujuan: Mengetahui efektivitas media *Blood Agar Plate* (BAP) dari darah manusia pascakedaluwarsa 20 hari dan 30 hari dibandingkan dengan darah domba dalam menumbuhkan bakteri *Streptococcus pyogenes*.

Metode Penelitian: Penelitian ini merupakan eksperimen dengan desain *Posttest Only Control Group Design*. Bakteri *Streptococcus pyogenes* ditumbuhkan pada media BAP dengan tiga perlakuan, yaitu darah pascakedaluwarsa 20 hari, 30 hari, dan darah domba. Pengamatan dilakukan terhadap diameter koloni dan zona hemolisis dengan 12 kali pengulangan. Analisis data menggunakan *uji Shapiro-Wilk*, dilanjutkan dengan *uji Kruskal-Wallis* dan *Mann-Whitney*.

Hasil: Rerata diameter koloni tertinggi terdapat pada darah pascakedaluwarsa 20 hari (0,84 mm), diikuti darah domba (0,82 mm), dan terendah pada 30 hari (0,66 mm). Rerata zona hemolisis tertinggi terdapat pada darah domba (1,66 mm), diikuti 20 hari (1,43 mm), dan terendah 30 hari (0,93 mm), dengan perbedaan signifikan ($p < 0,05$).

Kesimpulan: Media BAP dari darah manusia pascakedaluwarsa 20 hari efektif sebagai alternatif pengganti darah domba dalam menumbuhkan *Streptococcus pyogenes*, sedangkan pada 30 hari efektivitasnya lebih rendah.

Kata kunci: *Streptococcus pyogenes*, *Blood Agar Plate*, darah pascakedaluwarsa, diameter koloni, zona hemolisis

COMPARISON OF *Streptococcus pyogenes* COLONY GROWTH ON BAP BASED ON POST EXPIRED PMI BLOOD WASTE AT 20 AND 30 DAYS

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ABSTRACT

Background: Expired human blood is a medical waste that can no longer be used for transfusion; however, it still has potential as an alternative material for bacterial culture media. *Blood Agar Plate* (BAP) commonly uses sheep blood, which has limitations in availability and cost, making more accessible and economical alternatives necessary.

Objective: To determine the effectiveness of *Blood Agar Plate* (BAP) made from 20-day and 30-day expired human blood compared to sheep blood in supporting the growth of *Streptococcus pyogenes*.

Methods: This study was an experimental research with a Posttest Only Control Group Design. *Streptococcus pyogenes* was cultured on BAP media using three blood sources: 20-day expired human blood, 30-day expired human blood, and sheep blood. Observations were conducted on colony diameter and hemolysis zone with 12 repetitions. Data were analyzed using *Shapiro-Wilk* test, followed by *Kruskal-Wallis* and *Mann-Whitney* tests.

Results: The highest mean colony diameter was observed in 20-day expired human blood (0.84 mm), followed by sheep blood (0.82 mm), and the lowest in 30-day expired blood (0.66 mm). The highest mean hemolysis zone was found in sheep blood (1.66 mm), followed by 20-day expired blood (1.43 mm), and the lowest in 30-day expired blood (0.93 mm), with significant differences ($p < 0.05$).

Conclusion: *Blood Agar Plate* (BAP) made from 20-day expired human blood is effective as an alternative to sheep blood for the growth of *Streptococcus pyogenes*, while 30-day expired blood shows lower effectiveness.

Keywords: *Streptococcus pyogenes*, *Blood Agar Plate*, expired blood, colony diameter, hemolysis zone