

**PENGARUH LAMA SIMPAN DAN KONSENTRASI MANITOL PADA
PACKED RED CELL SAGM TERHADAP PERSEN HEMOLISIS DAN
INDEKS ERITROSIT**

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ABSTRAK

Packed red cell secara umum digunakan untuk meningkatkan jumlah sel darah merah pada pasien yang membutuhkan peningkatan kapasitas pembawa oksigen. *Packed red cell* berisi eritrosit dengan sebagian plasma yang telah dihilangkan dan ditambah zat preservatif ataupun tambahan larutan aditif pada kantong darah. Larutan aditif yang paling banyak dikenal ialah SAGM, yang terdiri dari *saline, adenine, glucose* dan *mannitol*. SAGM berfungsi untuk memperpanjang masa simpan serta mempertahankan fungsi dan metabolisme sel yang disimpan. Lisisnya eritrosit yang disebabkan karena ketidakseimbangan tekanan osmosis dapat diminimalkan sebesar <1% dengan cara menambahkan natrium klorida. Selain itu, penambahan 1-2% manitol dapat mengurangi lisis sampai 50%. Larutan aditif akan mendukung kelangsungan hidup eritrosit sehingga dapat disimpan sampai dengan 42 hari. Tujuan penelitian ini adalah untuk melihat apakah terdapat pengaruh lama simpan dan konsentrasi manitol pada *packed red cell* SAGM terhadap persen hemolisis dan indeks eritrosit. Penelitian ini menggunakan metode studi literatur. Data penelitian didapatkan dari penelusuran literasi terkait dengan topik penelitian. Hasil studi literatur menunjukkan bahwa terjadi peningkatan nilai persen hemolisis seiring dengan lamanya penyimpanan. Peningkatan nilai persen hemolisis ini belum menunjukkan eritrosit mengalami hemolisis. Tetapi, masih dalam proses hemolisis. Terjadi peningkatan nilai MCV dan penurunan nilai MCHC. Peningkatan konsentrasi manitol dapat menurunkan nilai persen hemolisis. Dapat disimpulkan bahwa, terdapat pengaruh lama simpan terhadap persen hemolisis dan indeks eritrosit serta terdapat pengaruh konsentrasi manitol terhadap persen hemolisis dan indeks eritrosit.

Kata Kunci: Lama simpan, *packed red cell* SAGM, manitol, persen hemolisis, indeks eritrosit

EFFECT OF STORAGE TIME AND CONCENTRATION OF MANNITOL IN PACKED RED CELL SAGM ON PERCENTAGE HEMOLYSIS AND ERTHROCYTE INDEX

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ABSTRACT

Packed red cells are generally used to increase the number of red blood cells in patients who need an increase in oxygen carrying capacity. Packed red cells contain erythrocytes with a portion of plasma that has been removed and added a preservative or additive solution to the blood bag. The most known additive solution is SAGM, which consists of saline, adenine, glucose and mannitol. SAGM serves to extend the shelf life and maintain the function and metabolism of stored cells. Erythrocyte lysis caused by osmotic pressure imbalance can be minimized <1% by adding sodium chloride. Other than that, addition of 1-2% mannitol can reduce lysis by up to 50%. Additive solution will support the survival of erythrocytes so that it can be stored for up to 42 days. The purpose of this study was to see whether there was an effect of the duration of storage and concentration of mannitol in packed red cell SAGM on percentage hemolysis and erythrocyte index. This research uses the literature study method. Research data obtained from literature searches related to the research topic. The results of the literature study show that there is an increase in the value of percentage hemolysis along with the duration of storage. This increase in value of hemolysis percentage has not indicated erythrocytes had hemolysis. However, it is still in the process of hemolysis. Occurred an increase in the value of MCV and decrease the value of MCHC. Increasing the concentration of mannitol can reduce the value of percentage hemolysis. It can be concluded that, there is an influence of shelf life on percentage hemolysis and erythrocyte index and there is an effect of mannitol concentration on percentage hemolysis and erythrocyte index.

Keywords: Storage time, *packed red cell* SAGM, mannitol, percentage hemolysis, erythrocyte indices.