

ABSTRAK

EFEK PEMBERIAN SUPLEMEN ION BESI TERHADAP KARAKTERISTIK PERTUMBUHAN KOLONI *Mycobacterium tuberculosis* SECARA *in vitro*

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Latar belakang: Tuberkulosis (TB) merupakan penyakit infeksi menular yang disebabkan oleh *Mycobacterium tuberculosis* yang sampai saat ini masih menjadi masalah dunia. *Mycobacterium tuberculosis* merupakan bakteri tahan asam yang tumbuh lambat. Ion besi merupakan mikronutrisi yang diperlukan oleh semua bakteri aerob untuk fungsi metabolik termasuk sintesis asam nukleat dan respirasi.

Metode: Penelitian ini merupakan penelitian eksperimental laboratoris dengan sampel penelitian merupakan isolat *Mycobacterium tuberculosis* yang sudah diidentifikasi. Isolat *Mycobacterium tuberculosis* ditanam pada media Lowenstein Jensen (LJ) yang ditambahkan suplemen ion besi (Fe) dengan tiga konsentrasi berbeda, yaitu 10 µg/ml, 20 µg/ml, dan 40 µg/ml, kemudian onset pertumbuhan diamati setiap harinya hingga minggu ketiga.

Hasil penelitian: Media LJ + Fe 20 µg/ml memiliki onset pertumbuhan tercepat dibanding media lainnya, yaitu 3 hari. Sedangkan onset pertumbuhan pada media LJ (control), LJ + Fe 10 µg/ml, dan media LJ + Fe 40 µg/ml yang tercepat yaitu 4 hari. Dari analisa statistik didapatkan bahwa tidak ada perbedaan yang signifikan onset pertumbuhan isolate *Mycobacterium tuberculosis* baik pada media LJ, LJ + Fe 10 µg/ml, LJ + Fe 20 µg/ml, dan LJ + Fe 40 µg/ml dengan nilai $p = 0,241$.

Kesimpulan: Penambahan suplemen ion besi yang bervariasi pada media pertumbuhan LJ (10 µg/ml, 20 µg/ml dan 40 µg/ml), tidak menimbulkan perbedaan pada onset pertumbuhan koloni *Mycobacterium tuberculosis*.

Kata kunci : Ion besi, onset pertumbuhan, *Mycobacterium tuberculosis*

ABSTRACT

EFFECT OF GIVING IRON SUPPLEMENTS IN CHARACTERISTICS GROWTH OF COLONY *Mycobacterium tuberculosis in vitro*

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Background: Tuberculosis (TB) is a contagious infectious disease caused by *Mycobacterium tuberculosis* that remains as a global problem. *Mycobacterium tuberculosis* is a slow-growing acid fast bacilli. Iron is an essential micronutrients for all aerobic bacteria for metabolic functions including nucleic acid synthesis and respiration.

Method: This research was a laboratory experimental study using previously identified *Mycobacterium tuberculosis* isolates. *Mycobacterium tuberculosis* isolate was inoculated on Lowenstein Jensen (LJ) media which added iron (Fe) supplements with three different concentrations, namely 10 µg / ml, 20 µg / ml, and 40 µg / ml, then growth onset was observed every day until the third week .

Result: LJ + Fe 20 µg / ml medium has the fastest growth onset compared to other media, which is 3 days. Whereas the growth onset of LJ (control), LJ + Fe 10 µg / ml, and 40 µg / ml LJ + Fe media were the fastest are 4 days. From the statistical analysis, it was found that there was no significant difference in the growth of onset of *Mycobacterium tuberculosis* isolates in both LJ, LJ + Fe 10 µg / ml, LJ + Fe 20 µg / ml, and LJ + Fe 40 µg / ml with p value = 0.241.

Conclusion: The addition of varying iron supplements to the LJ growth media (10 µg / ml, 20 µg / ml and 40 µg / ml) did not cause a difference in the onset of growth of the *Mycobacterium tuberculosis* colonies.

Keywords: iron, growth onset, *Mycobacterium tuberculosis*