# Anexos


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28 de novembro de 2023

| $t$ (min) | $\ln x$ (mg/L) |
|---|---|
| 10.50 | 6.28 |
| 20.33 | 6.35 |
| 30.67 | 6.40 |
| 40.57 | 6.42 |
| 50.67 | 6.50 |
| 60.67 | 6.58 |
| 70.50 | 6.63 |
| 80.00 | 6.63 |
| 90.25 | 6.67 |
| 100.08 | 6.69 |
| 110.12 | 6.69 |
| 120.83 | 6.71 |
| 130.07 | 6.73 |
| 140.20 | 6.73 |
| 150.25 | 6.74 |

Tabela 1: Tabela geradora do gráfico $\ln X \times t$ no método de Máltus

| $t$ (min) | $x$ (mg/L) |
|---|---|
| 10.50 | 531.39 |
| 20.33 | 570.53 |
| 30.67 | 599.82 |
| 40.57 | 612.59 |
| 50.67 | 662.98 |
| 60.67 | 719.34 |
| 70.50 | 754.73 |
| 80.00 | 759.19 |
| 90.25 | 784.50 |
| 100.08 | 801.25 |
| 110.12 | 804.42 |
| 120.83 | 823.52 |
| 130.07 | 834.77 |
| 140.20 | 840.04 |
| 150.25 | 846.95 |

Tabela 2: Tabela geradora do gráfico $X \times t$ no método Polinomial

| x (mg/L) | $\mu\,(\mathrm{min}^{-1})$ | | |
|---|---|---|---|
| | Euler | 3 Pontos | Polinomial |
| 531.39 | −7.77 E−3 | −3.90 E−4 | 7.56 E−3 |
| 570.53 | 6.98 E−3 | 5.95 E−3 | 6.78 E−3 |
| 599.82 | 4.73 E−3 | 3.47 E−3 | 6.14 E−3 |
| 612.59 | 2.11 E−3 | 5.16 E−3 | 5.69 E−3 |
| 662.98 | 7.53 E−3 | 8.01 E−3 | 4.91 E−3 |
| 719.34 | 7.84 E−3 | 6.43 E−3 | 4.18 E−3 |
| 754.73 | 4.77 E−3 | 2.73 E−3 | 3.63 E−3 |
| 759.19 | 6.17 E−4 | 1.99 E−3 | 3.24 E−3 |
| 784.50 | 3.15 E−3 | 2.67 E−3 | 2.72 E−3 |
| 801.25 | 2.13 E−3 | 1.25 E−3 | 2.24 E−3 |
| 804.42 | 3.92 E−4 | 1.33 E−3 | 1.77 E−3 |
| 823.52 | 2.16 E−3 | 1.85 E−3 | 1.22 E−3 |
| 834.77 | 1.46 E−3 | 1.02 E−3 | 7.46 E−4 |
| 840.04 | 6.19 E−4 | 7.19 E−4 | 2.13 E−4 |
| 846.95 | 8.12 E−4 | −6.35 E−4 | −3.36 E−4 |

Tabela 3: Dados do gráfico $\mu \times X$ no método de Euler, 3 pontos e Polinomial

| t-10.5 (min) | $x\,(\mathrm{mg/L})$ | | | | |
|---|---|---|---|---|---|
| | Exp | Malthus | Euler | 3 Pontos | Polinomial |
| 0.00 | 531.39 | 531.39 | 531.39 | 531.39 | 531.39 |
| 9.83 | 570.53 | 542.51 | 594.60 | 573.45 | 569.79 |
| 20.17 | 599.82 | 554.02 | 653.50 | 614.60 | 608.62 |
| 30.07 | 612.59 | 564.84 | 701.39 | 650.56 | 643.90 |
| 40.17 | 662.98 | 575.67 | 741.45 | 683.46 | 677.62 |
| 50.17 | 719.34 | 586.18 | 772.97 | 712.17 | 708.50 |
| 60.00 | 754.73 | 596.29 | 797.12 | 736.76 | 736.29 |
| 69.50 | 759.19 | 605.83 | 815.08 | 757.26 | 760.68 |
| 79.75 | 784.50 | 615.88 | 829.73 | 776.10 | 784.31 |
| 89.58 | 801.25 | 625.27 | 840.17 | 791.31 | 804.47 |
| 99.62 | 804.42 | 634.60 | 848.06 | 804.30 | 822.64 |
| 110.33 | 823.52 | 644.26 | 854.18 | 815.74 | 839.56 |
| 119.57 | 834.77 | 652.34 | 858.03 | 823.88 | 852.28 |
| 129.70 | 840.04 | 660.95 | 861.15 | 831.27 | 864.43 |
| 139.75 | 846.95 | 669.21 | 863.38 | 837.27 | 874.82 |

Tabela 4: Dados do gráfico $X \times t - 10.5$ que compara todos os métodos ultilizados junto dos dados experimentais

| $t\,(\mathrm{min})$ | $r_{O_2}\,(\frac{\mathrm{mg\ (O_2)}}{\mathrm{L.\,min}})$ | $V_{O_2}\,(\frac{\mathrm{mg\ (O_2)}}{\mathrm{mg\ (O_2).L}})$ |
|---|---|---|
| 0.00 | 1.21 | 2.11 E−3 |
| 10.50 | 1.21 | 2.28 E−3 |
| 20.33 | 1.32 | 2.31 E−3 |
| 30.67 | 1.44 | 2.40 E−3 |
| 40.57 | 1.58 | 2.58 E−3 |
| 50.67 | 1.74 | 2.63 E−3 |
| 60.67 | 1.78 | 2.48 E−3 |
| 70.50 | 1.79 | 2.37 E−3 |
| 80.00 | 1.87 | 2.46 E−3 |
| 90.25 | 1.89 | 2.41 E−3 |
| 100.08 | 1.86 | 2.32 E−3 |
| 110.12 | 1.91 | 2.37 E−3 |
| 120.83 | 1.88 | 2.29 E−3 |
| 130.07 | 1.74 | 2.08 E−3 |
| 140.20 | 1.69 | 2.01 E−3 |
| 150.25 | 1.67 | 1.97 E−3 |
| 160.01 | 1.61 | 1.94 E−3 |

Tabela 5: Dados do gráfico duplo $r_{O_2} \times t$ e $V_{O_2} \times t$

| t (min) | $r(\mathrm{mg/L\,min})$ | |
|---|---|---|
| | $O_2$ | $CH_3COOH$ |
| 0.00 | 1.21 | 1.14 |
| 10.50 | 1.20 | 1.12 |
| 20.33 | 1.29 | 1.21 |
| 30.67 | 1.41 | 1.32 |
| 40.57 | 1.56 | 1.46 |
| 50.67 | 1.69 | 1.58 |
| 60.67 | 1.73 | 1.63 |
| 70.50 | 1.74 | 1.63 |
| 80.00 | 1.81 | 1.70 |
| 90.25 | 1.86 | 1.75 |
| 100.08 | 1.81 | 1.70 |
| 110.12 | 1.84 | 1.72 |
| 120.83 | 1.82 | 1.71 |
| 130.07 | 1.67 | 1.57 |
| 140.20 | 1.65 | 1.55 |
| 150.25 | 1.65 | 1.55 |
| 160.01 | 1.58 | 1.48 |

Tabela 6: Dados do gráfico $r \times t$

| $\mu\,(\mathrm{min}^{-1})$ | $r_{O_2}\,(\frac{\mathrm{mg\ (O_2)}}{\mathrm{L.\,min}})$ |
|---|---|
| 2.31 E−3 | 5.95 E−3 |
| 2.40 E−3 | 3.47 E−3 |
| 2.58 E−3 | 5.16 E−3 |
| 2.63 E−3 | 8.01 E−3 |
| 2.48 E−3 | 6.43 E−3 |
| 2.37 E−3 | 2.73 E−3 |
| 2.46 E−3 | 1.99 E−3 |
| 2.41 E−3 | 2.67 E−3 |
| 2.32 E−3 | 1.25 E−3 |
| 2.37 E−3 | 1.33 E−3 |
| 2.29 E−3 | 1.85 E−3 |
| 2.08 E−3 | 1.02 E−3 |
| 2.01 E−3 | 7.19 E−4 |

Tabela 7: Dados do gráfico $\mu \times r_{O_2}$ usado para calcular o coeficiente de crescimento $Y_{O_2/X}$

| $\mu\,(\mathrm{min}^{-1})$ | $V_{CH_3COOH}\,(\frac{\mathrm{mg\ (CH_3COOH)}}{\mathrm{mg\ (X).\,min}})$ |
|---|---|
| 5.95 E−3 | 2.11 E−3 |
| 3.47 E−3 | 2.13 E−3 |
| 5.16 E−3 | 2.20 E−3 |
| 8.01 E−3 | 2.39 E−3 |
| 6.43 E−3 | 2.39 E−3 |
| 2.73 E−3 | 2.26 E−3 |
| 1.99 E−3 | 2.17 E−3 |
| 2.67 E−3 | 2.24 E−3 |
| 1.25 E−3 | 2.22 E−3 |
| 1.33 E−3 | 2.12 E−3 |
| 1.85 E−3 | 2.14 E−3 |
| 1.02 E−3 | 2.08 E−3 |
| 7.19 E−4 | 1.88 E−3 |

Tabela 8: Dados do gráfico $V_{CH_3COOH} \times \mu$