

Estimation of the Q10 value; the temperature coefficient for the growth of *Pseudomonas* sp. AQ5-04 on phenol

ABSTRACT

The Q10 value is tied to an increase in the surrounding temperature with an increase in 10 °C, and usually resulted in a doubling of the reaction rate. When this happens, the Q10 value for the reaction is 2. This value holds true to numerous biological reactions. To date, the Q10 value for the biodegradation of phenol is almost not reported. The Q10 values can be determined from the Arrhenius plots. In this study, the growth rate or biodegradation rates in logarithmic value for the bacterium *Pseudomonas* sp. AQ5-04 was plotted against 1000/temperature (Kelvin) and the slope of the Arrhenius curve is the value of the E_a , which was utilized to obtain the Q10. The value obtained in this work was 1.834, which is slightly lower than the normal range of between 2 and 3 for the biodegradation rates of hydrocarbon in general and shows that this bacterium is a very efficient phenol-degrading bacterium.

Keyword: Q10 value; Phenol-degrading bacterium; *Pseudomonas* sp.; Arrhenius plot