

Recent Advances in Microbial Production of Vitamin B12: Review of Optimization Strategies and High-Yielding Strains

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Abstract

Vitamin B12 is a water soluble vitamin and plays a significant role during metabolism. It also acts as the cofactor of many enzymes during DNA synthesis. Moreover Vitamin B12 is involved in red blood cells production, healthy nerve tissues and brain functions. Certain archaeon and bacteria has the ability to synthesize the vitamin B12 and it is not been synthesized in plants. The synthesized vitamin B12 in microbes has the ability to be transferred and can be present in many of the plants, mushrooms by microbial interaction also in Animal tissues so ruminant's meat and milk can act as source of vitamin B12. By increasing demand of vitamin B12 Scientists have used microbes for its production at industrial scale by giving them optimized culture conditions including *Sinorhizobium meliloti*, *Propionibacterium shermanii*, or *Pseudomonas denitrificans*. The different substrates especially agro-industrial waste because of their low price and high content of carbon can be used for microbial growth. Both modes of fermentation (solid and submerged fermentation) are used for Vitamin B12 production from microbes. Different strains grow at different culture conditions. This review is based upon the short introduction of vitamin B12, its different sources, different substrates for production; optimized culture conditions its purification and extraction.

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