

Effect of temperature on heterologous expression of lectin CnSLB in minimal growth medium

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Lectins are proteins that specifically and reversibly bind carbohydrates without modifying them. CnSLB is a new lectin discovered in *Clitocybe nebularis* with interesting biochemical properties and insecticidal activity but currently unknown structure. The purpose of research was to yield enough labelled protein for studies of its three-dimensional structure. We used *Escherichia coli* BL21 (DE3) and *E. coli* BL21 (DE3) pTTRX cells as heterologous expression systems. Using autoinduction defined minimal growth medium and incubation at different temperatures (15°C, 18°C, 20°C and 22°C) we analyzed the solubility of the expressed proteins with polyacrylamide gel electrophoresis. As observed at all examined temperatures CnSLB was expressed as insoluble protein in inclusion bodies. The yield of CnSLB expression was proportional to increasing temperature, with 22°C as the highest observed yield. In conclusion, lectin CnSLB is in the bacterial expression system expressed in inclusion bodies regardless of the temperature in the process. The yield was, however, higher with higher temperature used. Therefore, to obtain the labelled protein for structural studies heterologous expression at higher temperatures (25°C and 27°C) will be performed to increase the yield even further and finally the refolding process will be developed.