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## Production of cholesterol oxidase from isolated *Rhodococcus sp.* in salted shrimps

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The aim of this study is the production of cholesterol oxidase, an enzyme which has the special property to catalyze the oxidation of cholesterol, in the presence of molecular oxygen, to 4-cholesteroen-3-one and hydrogen peroxide. This reaction is of particular interest for researchers due to the fact, that although cholesterol is to some extent an important substance in the human body, an accumulation of this compound in the blood stream (hypercholesterolemia) is a major risk factor for coronary heart disease, which can lead to heart attack. Hence in order to improve the health status of many dietary patients, it is important have a degrading reactant, which can hinder the abovementioned endangerment.

New strain was isolated from Korean traditional food, salted shrimps and was identified to *Rhodococcus sp.* by analysis of 16S rDNA sequence. The isolation was found to have the high ability to produce active cholesterol oxidase extracellularly under aerobic conditions. To find optimal condition for production of cholesterol oxidase, experiments of media composition, activity test, and scale-up were performed.

In previous studies, the obtained peak amounts of cholesterol oxidase with *Rhodococcus sp.* are stated to be 0,242 units/ml after 60-72h of cultivation. In this study however, BHI (Brain Heart Infusion) medium was used for the production in fermentation scale and results about 20 times higher could be achieved in much shorter time. The yield of Erlenmeyer flasks incubations showed even values as high as 9 units/ml after 3 days, however since only limited volumes of medium can be incubated this way, enzyme production in bioreactors seems more reasonable. Best highest peak enzyme activities could be obtained for fermenter settings with an air supply of 3l/min and rotation of the stirrer at 150 rpm. Values as high as 4,2052 units/ml enzyme could be stated after a cultivation time of 21 hours.

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In conclusion, one can say that the BHI medium is suitable substrate for the micro organism to produce great cholesterol oxidase amounts. The great drawback of this medium is however its high costs.