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INTRACELLULAR EXPRESSION

PRAPRUDDEE PIYAVIRIYAKUL: PRODUCTION OF WHOLE YEAST
CELLS CONTAINING A HIGH LEVEL OF INTRACELLULAR EXPRESSION OF
GIANT CATFISH GROWTH HORMONE. THESIS ADVISORS: LILY
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Mature giant catfish growth hormone (gcGH) cDNA situated between 5'UTR of *HSP26* and 3'UTR of *CYCI* was inserted downstream of different yeast constitutive promoters such as *ADHI*, *PGK* and *GAPDH* or yeast inducible promoter, *GALI*. All promoters were located in different types of plasmids except *ADHI* and *GAPDH* promoters. Intracellular expression of gcGH under a control of different promoters in *Saccharomyces cerevisiae* BJ5462 grown in minimal medium (MM) was determined and compared. The highest level of gcGH expression was observed in a recombinant yeast producing gcGH under a control of *PGK* promoter (r-yeast pYEXK8) (17.1 mg/l). *GAPDH* promoter gave a level of gcGH expression higher than that of *ADHI* promoter although both promoters are located in the same type of plasmids. The level of gcGH obtained from r-yeast pYEXK8 was increased when cells were grown in a rich medium (YEPD). In fact, it was shown in this study that r-yeast pYEXK8 grown in YEPD gave approximately 10 times higher cell density than that grown in MM and gave the highest level of gcGH expression, approximately 6 times (102.5 mg/l) higher than that grown in MM. Recombinant yeast containing gcGH was mixed with fish diet at the dosage of 20, 50 and 100 mg of gcGH/kg of fish diet and orally fed to the catfish. Percentage of catfish mortality rate increased up to 58.7% within 2 weeks of the experiment. Several factors originating from the experimental procedure such as artificial culturing of fish, fish handling to determine their weight and length and maintainance might have contributed to the high mortality rate.