

Title	Studies on mikamycin B lactonase. V. metabolic control in mikamycin B fermentation
Sub Title	
Author	Kim, Chang Han(Endo, Toyoshige) 遠藤, 豊成(Yonehara, Hiroshi) 米原, 弘
Publisher	共立薬科大学
Publication year	1988
Jtitle	共立薬科大学研究年報 (The annual report of the Kyoritsu College of Pharmacy). No.33 (1988.) ,p.171- 171
JaLC DOI	
Abstract	
Notes	抄録
Genre	Technical Report
URL	https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=AN00062898-00000033-0171

慶應義塾大学学術情報リポジトリ(KOARA)に掲載されているコンテンツの著作権は、それぞれの著作者、学会または出版社/発行者に帰属し、その権利は著作権法によって保護されています。引用にあたっては、著作権法を遵守してご利用ください。

The copyrights of content available on the KeiO Associated Repository of Academic resources (KOARA) belong to the respective authors, academic societies, or publishers/issuers, and these rights are protected by the Japanese Copyright Act. When quoting the content, please follow the Japanese copyright act.

Studies on Mikamycin B Lactonase. V. Metabolic Control in Mikamycin B Fermentation

Chang Han KIM*, Toyoshige ENDŌ and Hiroshi YONEHARA*

Chang Han KIM*, 遠藤豊成, 米原 弘*

Mikamycins A and B (abbreviated MK-A and -B) are the products of *Streptomyces mitakaensis*, which show typical synergistic activity against Gram-positive bacteria. However, the fermentation course was complicated by the participation of another factor, MK-B lactonase, whose action was estimated to be the hydrolysis at the lactonic linkage of MK-B into the antimicrobially inactive MK-B acid: This enzyme reaction caused the depression of MK-B accumulation.

From the view point of antibiotic production, this type of interaction between two metabolites, *i.e.* production of a desired metabolite and its destruction by an enzyme produced by the same organism, is novel, but highly undesirable, hence the metabolic control or the selective elimination of this enzyme activity should be expected to enhance antibiotic production.

The lactonase, purified from the mycelial cells, has a molecular weight of 29,000, and catalyzes the hydrolytic degradation of MK-B and its analogues. The enzyme activity was maximal at pH 7.0~8.0 and 27°C for an incubation of 60 minutes; it was stimulated by the presence of Mg^{2+} ion, but inhibited by heavy metal ions such as Cu^{2+} and Ni^{2+} ions.

S. mitakaensis in normal conditions (control) yielded 90 $\mu\text{g/ml}$ of MK-A and 2 $\mu\text{g/ml}$ of MK-B after 72 hours of cultivation. Adjustment of pH to 7 starting 20 hours and addition of an enzyme inhibitor, especially Ni^{2+} ion (0.01%), increased the yields to 200 $\mu\text{g/ml}$ of MK-A and 12 $\mu\text{g/ml}$ of MK-B at 72 hours of cultivation, a 2- and a 6-fold increase over the control. The properties of the MK-B lactonase have been thus exploited successfully to improve MK-B production and to prevent its degradation.

本報告は *J. Antibiotics*, 41 (1), 73-80 (1988) に発表.

* 東京大学応微研第6研