

Turkish Journal of Medical Sciences

Turkish Journal

In Vitro Effects of Some Antibiotic Drugs on Bovine Lactoperoxidase Enzyme

of

Medical Sciences

Murat ÇANKAYA¹



Melda ŞİŞECİOĞLU¹

Özgur YÖRÜK²

Hasan ÖZDEMİR¹

¹Department of Chemistry, Faculty of Arts and Sciences, Atatürk University, 25240 Erzurum - TURKEY

²Department of Otolaryngology, School of Medicine, Atatürk University, Erzurum - TURKEY

 [Keywords](#)
 [Authors](#)



medsci@tubitak.gov.tr

[Scientific Journals Home Page](#)

Abstract: Aim: Owing to the widespread use of antibiotic drugs in both human and animals, we thought it would be important to determine the effect of these on lactoperoxidase (LPO; E.C. 1.11.1.7) activity during lactation. The in vitro effects of gentamicin sulfate and ampicillin sodium drugs on bovine LPO enzyme activity in breast-milk were investigated. Materials and Methods: LPO was purified with Amberlite CG 50 resin, CM Sephadex C-50 ion-exchange chromatography, and Sephadex G-100 gel filtration chromatography from skimmed bovine milk. Rz(A412/A280) value for the purified LPO was found to be 0.8. Inhibition or activation effects of the drugs on LPO enzyme were determined using 2,21-azino-bis (3-ethylbenzthiazoline-6 sulfonic acid) diammonium salt (ABTS) as a chromogenic substrate at pH = 6.0. Results: The purified enzyme showed a single band on sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE). I50 values of gentamicin sulfate and ampicillin sodium drugs exhibiting inhibition effects were obtained by drawing % Activity- [drugs] graphs. The obtained I50 values of gentamicin sulfate and ampicillin sodium were 3.71 mM and 0.89 mM, respectively. Ki constants of the drugs were found by means of Lineweaver-Burk graphs. The obtained Ki constants for gentamicin sulfate and ampicillin sodium were 4.36 ± 3.122 mM and 0.473 ± 0.099 mM, respectively, and they were competitive inhibitors. Conclusions: Use of antibiotics may worsen the LPO activity in milk during lactation. If these antibiotic drugs are required during lactation, their dosage should be carefully determined to decrease the side effects.

Key Words: Lactoperoxidase, antibiotic drugs

Turk J Med Sci 2006; **36**(5): 301-306.

Full text: [pdf](#)

Other articles published in the same issue: [Turk J Med Sci,vol.36,iss.5.](#)