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BIOCHEMICAL STUDIES OF XANTHINE OXIDASE IN MILK

Thesis submitted by

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**FOR THE FULFILLMENT OF DOCTOR
PHILOSOPHY IN SCIENCE
(BIOCHEMISTRY)**

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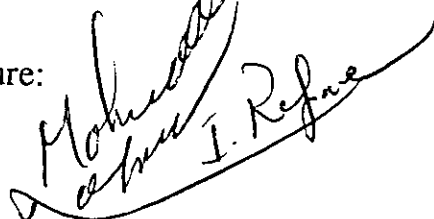
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Abstract

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Title of Thesis: Biochemical Studies of Xanthine Oxidase in Milk.

Degree: (Ph.D) Thesis, Faculty of Science Cairo University, 2001 /2002.

This work has been carried out to prepare and purify milk xanthine oxidase (XO). Milk XO was separated and purified by gel chromatographic methods. The elution profile recorded two peaks, dimeric and monomeric XO respectively. The inhibitory effect of folic acid, sod. ascorbate, sod. bisulfite on the activity of XO was monitored by incubating the enzyme with different concentrations of these inhibitors. Moreover the effect of morin and myricetin as flavonoids on the XO activity were also studied. The interactions of milk XO with some chemical modifiers such as N-phenylmaleimide, *p*-toluenesulfonyl chloride, and 2- mercaptobenzimidazole were examined spectrophotometrically.

Key Words: Milk-enzyme, Xanthine-oxidase, Purine-catabolism, Gout, Uric acid, Enzyme-assay, Purification, Inhibition, Modification, Modified-enzyme.

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LIST OF ABBREVIATIONS

A	Absorbance.
AFR	Activity to Flavin Ratio .
BDH	British Dray Houses Chemicals Ltd.
CCCD	Centrifugal counter – current distribution.
DEAE	Diethyl amino ethyl .
dil.	Dilution .
EDTA	Ethylenediamine – tetraacetic acid .
FAD	Flavin adenine dinucleotide .
g / ml	Gram per millilitre .
hr.	Hour .
M	Mole .
mg	Milligram .
min.	Minute .
mM	Millimole .
Mol. Wt.	Molecular weight .
mU / ml	Milliunits per millilitre .
NAD ⁺	Nicotinamide adenine dinucleotide.
nm	Nanometer .

OX.	Oxidized .
PEG	Polyethylen glycol .
red.	Reduced.
RPM	Rotation per minute .
Sec.	Second .
Sod.	Sodium .
T.C.A.	Trichloroacetic acid .
U / mg	Unite per milligram .
U / ml	Unite per millilitre .
UV	Ultraviolet .
Vol.	Volume .
Xan.	Xanthine .
XDH	Xanthine dehydrogenase .
XO	Xanthine oxidase .
GH	Growth hormone.
EGF	Epidermal growth factor.
MFGH	Milk fat globule membrane.
ELISA	Enzyme linked immunosorbent assay.
hXDH	Human xanthine dehydrogenase.
Pt.	Pterin

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