

Assessment of PH and Chloride levels in
exhaled breath condensate of children with
chronic pulmonary illness

Thesis

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By

Azza Mohey Eldin Ebrahim

(M.B.B.CH.)

Ain Shams University (2006)

Under Supervision of

Prof. Dr./ Karima Ahmed Abdel-khalek

Professor of Pediatrics

Faculty of Medicine - Ain Shams University

Prof. Dr./ Eman Mahmoud Fouda

Professor of Pediatrics

Faculty of Medicine - Ain Shams University

Faculty of Medicine

Ain Shams University



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Dedication

 To

*My dear mother, father
, my husband, my baby
and my Daughter Sama*





Acknowledgment

*At first, I would like to thank **ALLAH** who gave me the ability to finish this work.*

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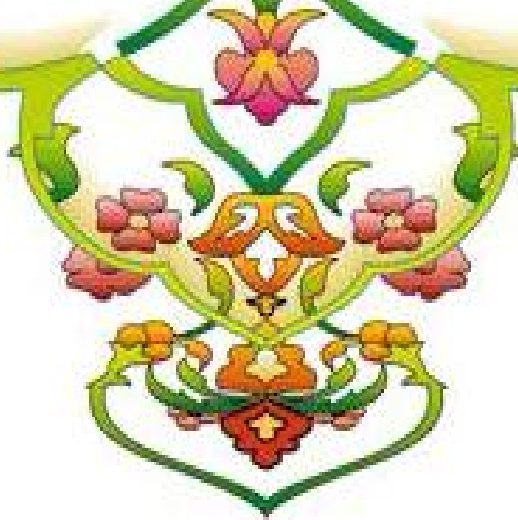
 *Azza Mohey*



وفي أنفسكم أفلا تبصرون

صدق الله العظيم

سورة الذاريات الآية (٢١)



List of Abbreviations

AHR	:	Airway Hyper responsiveness
AOX	:	Adsorbed-organic-halogen technique
API	:	Asthma predictive index
ASL	:	Airway surface lining fluid
ATS	:	American Thoracic Society
BAL	:	Bronchoalveolar lavage
CF	:	Cystic fibrosis
ChILD	:	Children's interstitial lung disease
CL	:	Chloride
CLD	:	Chronic lung disease
CO	:	Carbon monoxide
CO₂	:	Carbon dioxide
COPD	:	Chronic obstructive pulmonary disease
CXR	:	Chest x ray
Cys LTs	:	Cysteinyl leukotrienes
DALYS	:	Disability-adjusted life years
DLCO	:	Diffusion capacity of the lung to carbon monoxide
DPPC	:	Dipalmitoylphosphatidylcholine
EBC	:	Exhaled breath condensate
ECM	:	Extracellular matrix
ECP	:	Eosinophil cationic protein
ELF	:	Epithelial lining fluid
ELISA	:	Enzyme-linked immunosorbent assay
EPX	:	Eosinophil protein X
ERS	:	European Respiratory Society
FcεRI	:	Fc epsilon RI (high affinity IgE receptor)

Fe_{NO}	:	Fractional exhaled nitric oxide
FEV1	:	Forced expiratory volume in the first second.
FVC	:	Forced vital capacity
GINA	:	Global initiative for asthma
GSH	:	Glutathione
H₂O₂	:	Hydrogen Peroxide
HCO₃⁻	:	Bicarbonate
HRCT	:	High Resolution CT
ICS	:	Inhaled corticosteroids
IFN γ	:	Interferon γ
IgA	:	Immunoglobulin A
IgE	:	Immunoglobulin E
IL	:	Interleukin
ILD	:	Interstitial lung disease
IOS	:	Impulse oscillometry
IPF	:	Interstitial pulmonary fibrosis
IU	:	International unit
LTE4	:	Leukotriene E4
MDC	:	Macrophage-derived chemokines
MDIs	:	Metered-Dose inhaler
MMEFR	:	Maximal mid expiratory flow rate
NAEPP	:	National Asthma Education and Prevention Program
NF-κB	:	Nuclear Factor Kappa B
NH₄⁺	:	Ammonia
NO	:	Nitrogen oxide
NOS	:	Nitric oxide synthase

PCD	:	Primary ciliary dyskinesia
PCP	:	Pneumocystis Carnii pneumonia
PEFR	:	Peak expiratory flow rate
PR	:	Pulmonary rehabilitation
RSV	:	Respiratory syncytial virus
RV	:	Residual volume
SD	:	Standard Deviation
sRAGE	:	Soluble Receptor for Advanced Glycation End Product
TARC	:	Thymus and activation regulated chemokines
Th1	:	T-helper 1
Th2	:	T-helper 2
TLC	:	Total lung capacity
TLC	:	Total leukocytic count
TNF-α	:	Tumor necrosis factor- α
ULTE4	:	Urinary leukotriene E4
VEGF	:	Vascular endothelial growth factor
VOC	:	Volatile organic compounds
WHO	:	World Health Organization

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