Ain Shams University
Faculty of Science
Chemistry Department

"Determination of Rasagiline Mesylate in dosage form and in human plasma and its application in bioequivalence study"

A Thesis

"Submitted for the degree of Master of Science As a partial fulfillment for requirements of the master Science"

By

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(Bachelor of Science of Damietta, Mansoura University, 2007)

Under supervision of

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2017

Acknowledgment

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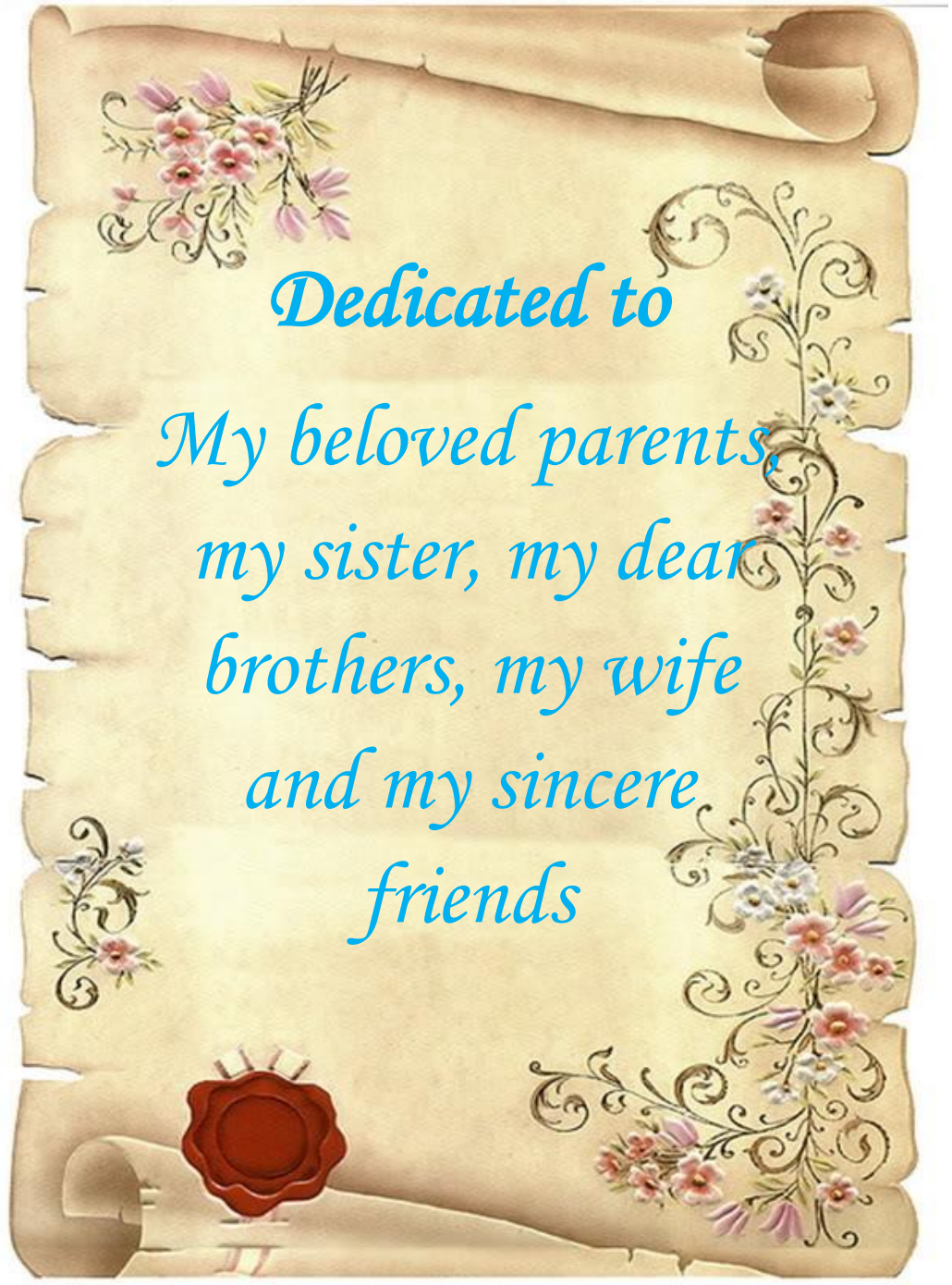
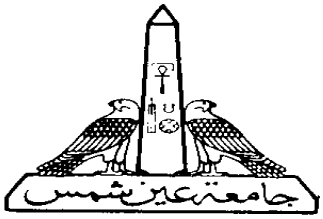

Dedicated to
My beloved parents, my sister, my dear brothers, my wife and my sincere friends



Faculty of Science
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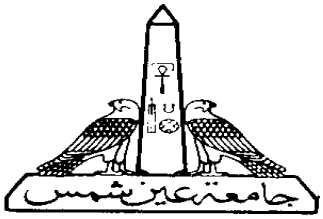

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A Thesis submitted by

Hassan Mohamed Hassan Soliman

Submitted for the degree of Master in Science
(Analytical chemistry)

This thesis for master degree in analytical chemistry has been approved by:

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Title of thesis:

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Abstract

Bioequivalence study was performed for the comparison of generic Rasagiline tablet against Rasagiline reference listed drug in both in vitro and in vivo. For the in vitro part: A reverse phase high performance liquid chromatographic method was developed and validated for the determination of Rasagiline Mesylate in the dosage form. Chromatographic separation was carried out on a C_{18} column using a mobile phase consisting of (acetonitrile: 0.02 M ammonium acetate, 60:40, V/ V). The flow rate was 1.0 ml/min. Fluorescence detector was employed with excitation at 210 nm and emission at 288 nm. The calibration curve was linear over the range (0.5–3.00) μg/ml with a correlation coefficient of 0.998. The simplicity and rapidity of the developed method made it very suitable for routine analysis of Rasagiline Mesylate in the dosage form. While in the vivo study, Liquid chromatography mass spectrometric method was used to quantitate Rasagiline in human plasma. Liquid-liquid extraction with Ethyl acetate was used to extract Rasagiline from plasma using Clonazepam as the internal standard, The column was Agilent C18 (3.6 μm, 50 x 4.6 mm) and the mobile phase was (acetonitrile, 0.01 M ammonium formate 80: 20, V/ V at pH 5.5) adjusted with formic acid, multiple reaction monitoring mode via positive electrospray ionization was used to monitor the transitions m/z 172.1

→m/z (117.1) for Rasagiline, and m/z 316.963 →m/z 270 for Clonazepam. The method was validated according to FDA guidelines and then employed in the bioequivalence to measure Rasagiline Mesylate in human plasma and compare the equivalence of generic Rasagiline tablet (Parkintreat 1 mg Tablets Inspire Pharmaceutical Company, Egypt) versus reference listed drug (Azilect® 1 mg Tablets from Teva Pharmaceuticals, USA) after a single oral dose administration of each to twenty four healthy adults under fasting conditions.

Key words: Bioequivalence, Bioanalytical validation, Dissolution, Fluorescence, HPLC, Tandem mass spectrometry

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