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**SYNTHESIS OF STRUCTURED LIPID AND IMPROVING ITS  
OXIDATIVE STABILITY USING POTENT ANTIOXIDANT  
EXTRACTED FROM OLIVE LEAVES**

**Thesis Submitted**

**by**

**AHMED IBRAHIM MOHAMED ABD ELGAWAD**

**For**

**Ph.D. Degree of Science in Chemistry**

**To**

**Department of Chemistry**

**Faculty of Science, Ain Shams University**

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# تحضير إحدى الليبيدات المعدلة وتحسين ثباتها ضد التأكسد باستخدام إحدى مضادات الأكسدة المستخلصة من ورق الزيتون

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## *SPECIAL DEDICATION*

*This thesis is dedicated to my father and  
Mother*

*Who supported me with everything they have  
and for their faith in me and allowing me to  
be as ambitious as I want.*

*And*

*My brother Ibrahim and my sisters  
for their support and encouragement*

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# List of Abbreviations

A.A.	Antioxidant activity
ADL	NovoCor ADL
ALA	Alpha linolenic acid; C18:3 n-3
BPI	The relative base peak ion chromatogram
CO	Canola oil
DPPH	2,2-Diphenyl-1-picrylhydrazyl radical
FA	Ferulic acid
FAGs	Feruloylated acylglycerols
FCO	Feruloylated canola oil
FFAs	Free fatty acids Feruloylated structured lipids
FLS	Feruloylated linseed oil
FPS	Feruloylated palm stearin
FSLs	Feruloylated structured lipids

LA	Linoleic acid; C18:2 n-6
LCSFA	Long chain saturated fatty acid
LCUFA	Long chain unsaturated fatty acid
LS	Linseed oil
N435	Novozyme435®
OA	Oleic acid; C18:1 n-9
PA	Palmitic acid; C16:0
PS	Palm stearin
SFS	Solvent free system reaction
TAGs	Triacylglycerols
TLL	Lipozyme TL 100L

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