

دراسة طيفية لتأثيرات مبيدي البيرمثرين والتتراثرين مع بعض مكونات السلسلة التنفسية
(مساعد الانزيم (10) وسائتروم (C)

/ / /

(NJC)

(تاريخ القبول 2008/3/24)

(تاريخ الاستلام 2007/3/14)

221 (λ_{max})

(,)

220,

 $(10^{-5} \times 5 - 10^{-7})$

,()

264 Ub₀() Q₁₀. (Ub₀) (Ub₀)

272 273

C

(C)

(Tet. + C) (Per. + C) ¹⁻ . ¹⁻ . (5140 , 10880). ¹⁻ . ¹⁻ . (10162) (1:1)**Abstract**

The electronic absorption spectroscopy studies the physical properties of pyrethroids in several solvents with different polarity (methanol and hexane). The maximum wavelength (λ_{max}) for these compounds have been determined and found to be (221,220) nm for permethrin and tetramethrin respectively in hexane solvent.

The ultraviolet spectrum proved that there is an interaction ,for the pyrethroid compounds with electron carriers as part of the respiratory chain components, which have indicated the formation of complexes through the displacement of the maximum absorption wavelength for the semi-Coenzyme Q(10) (ubiquinon 0) Ub₀ $\lambda=264$ nm to (273,272)nm for (per.+ Ub₀) and (Tet. + Ub₀) complexes. Also through uv. spectrum, it was approved that there was interactions occurred between the pyrethroide compounds with electron carrier (cytochrome C) and the decrease of molar absorption coefficient, ϵ values for the mixture components that equal to (10880 , 5140) l. mol⁻¹. cm⁻¹ for two complexes (cyt.C + per.) , (cyt.C+ Tet.) respectively ,with (1:1) ratio interactions between mixture components, that equal to (10162) l. mol⁻¹. cm⁻¹ for cytochrome C alone.

That have certainty occurred and to the formation of complexes with inhibition the respiratory process with cutting pass of electron and the energy production.

(7) Miya Mota

(1)

)
(

(2)

(noncronic)

inhibition

(10 - 8)

, (Larva)

)

(3)

(
(Q₁₀)

Hydrolysis

photodegradation

)

(

)

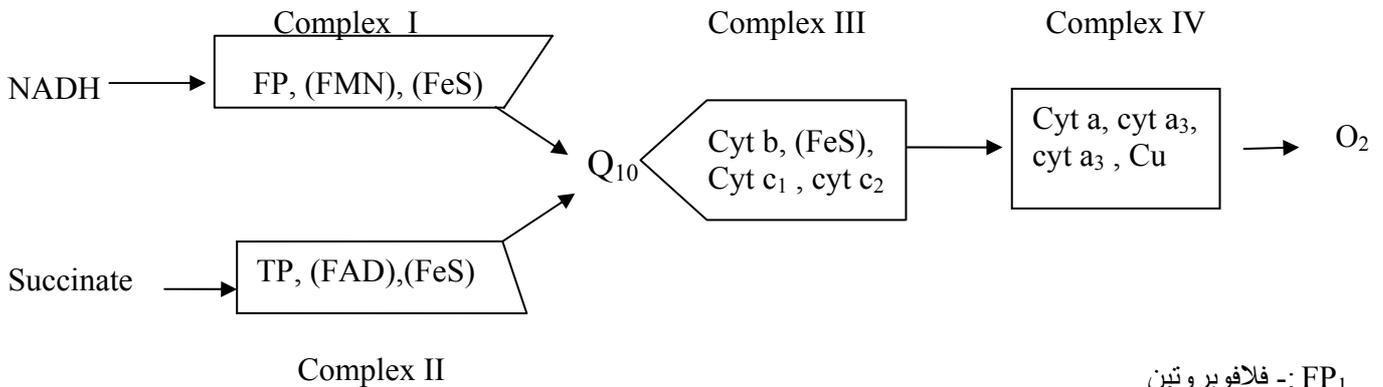
(

(6 - 4)

electronegative

(

(²) conjugation



FP₁ :- فلاوبروتين

Q :- مساعد الانزيم

مخطط يشير الى المعقدات الاربعة التي يكونها مساعد الانزيم

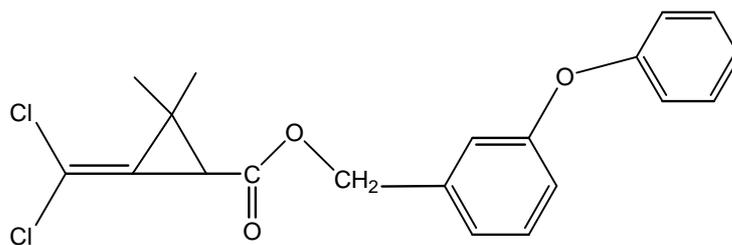
مع الفلاوبروتينات والسايوكروومات

Uv.visible
 10^{-4} stock solutions -:
 %99 Ub₀ -:
 Fluka AG. Bachs SG Switzerland Cintra 5-GBC Scientific
 (1:1)
 (C)
 ,BDH chemical LTD Pool-England)
 . C (Ub₀)
 .(Ub₀)

Permethrin (C₁₂H₂₀Cl₂O₃)-

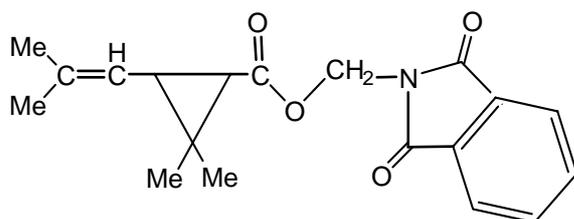
Fluka

%99



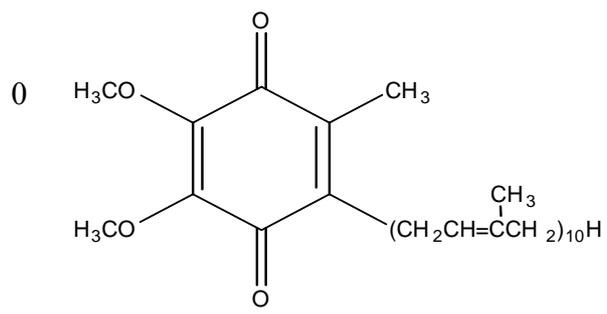
Premethrin C₁₂H₂₀Cl₂O₃

(3-phenoxy phenyl) methyl-3-(2,2-dichloroethenyl)-2,2-dimethyl -cyclopropane carboxylate



Tetramethrin C₁₉H₂₅NO₄ -

Cyclohex-1-2-dicarboximidomethyl(IRS)-cis-trans-2,2-dimethyl-3-(2-methyl propa-1-enyl)cyclopropan carboxylate



Ubequinon (Ub₀) -

C

()

10⁻⁴ 10⁻⁴

0.0034 0.0042

10

+ C (1:1)

(+ C) (

10

Ub₀

(2, 1)

(2, 1) -1

220, 221

(10⁻⁷ - 10⁻⁵ × 5)

, 211 = λ_{max}

-2 264

-: Ub₀

C 0.013

) (1) 10

Ub₀ (10⁻⁴

, Q₁₀ 37

) (Ub₀)

(3) (-: C Ub₀

(272– 265) (211 , 264)
) 273 + Ub₀
 . (5, 4

Ub₀ : (1)

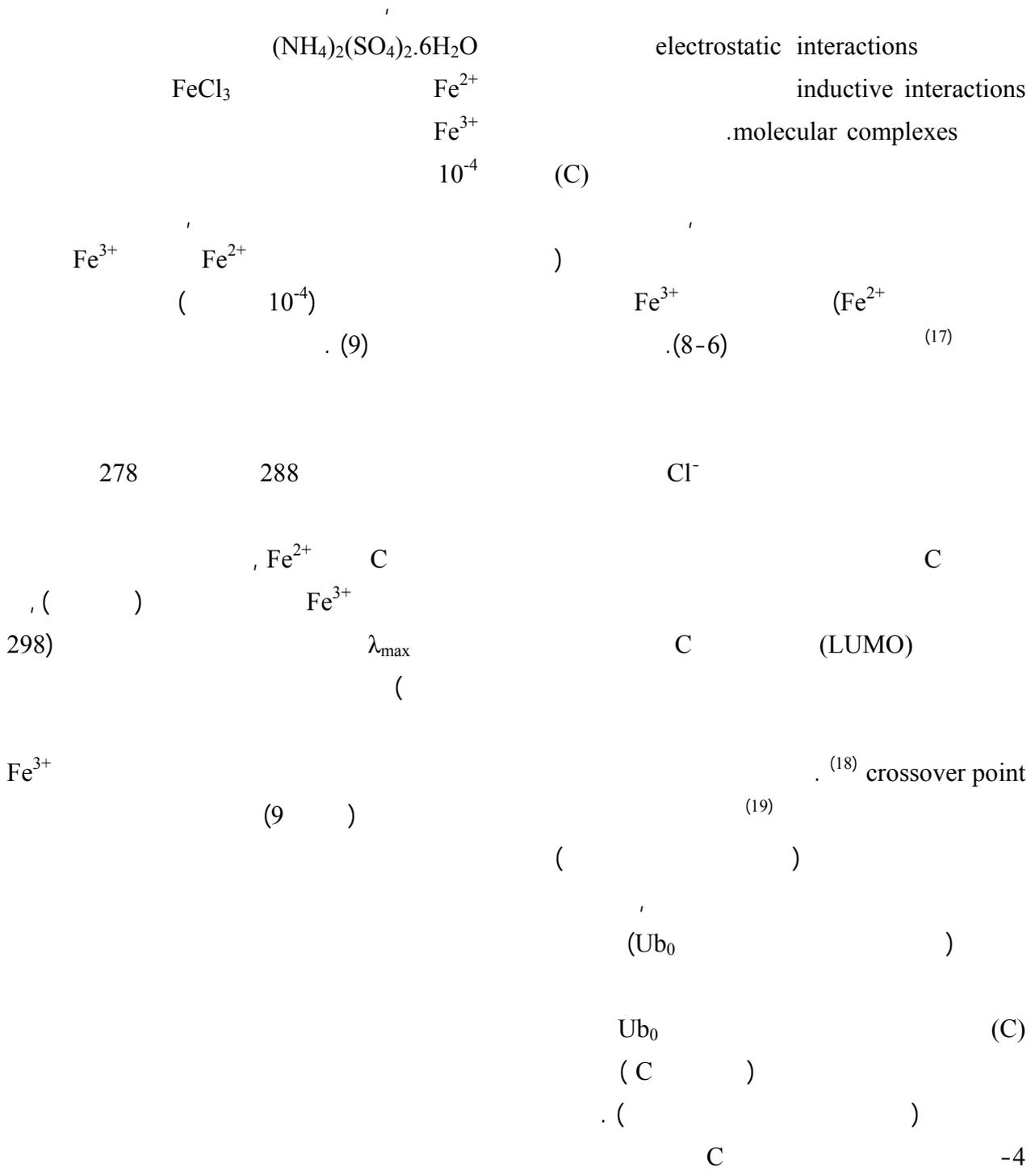
(264, 211)

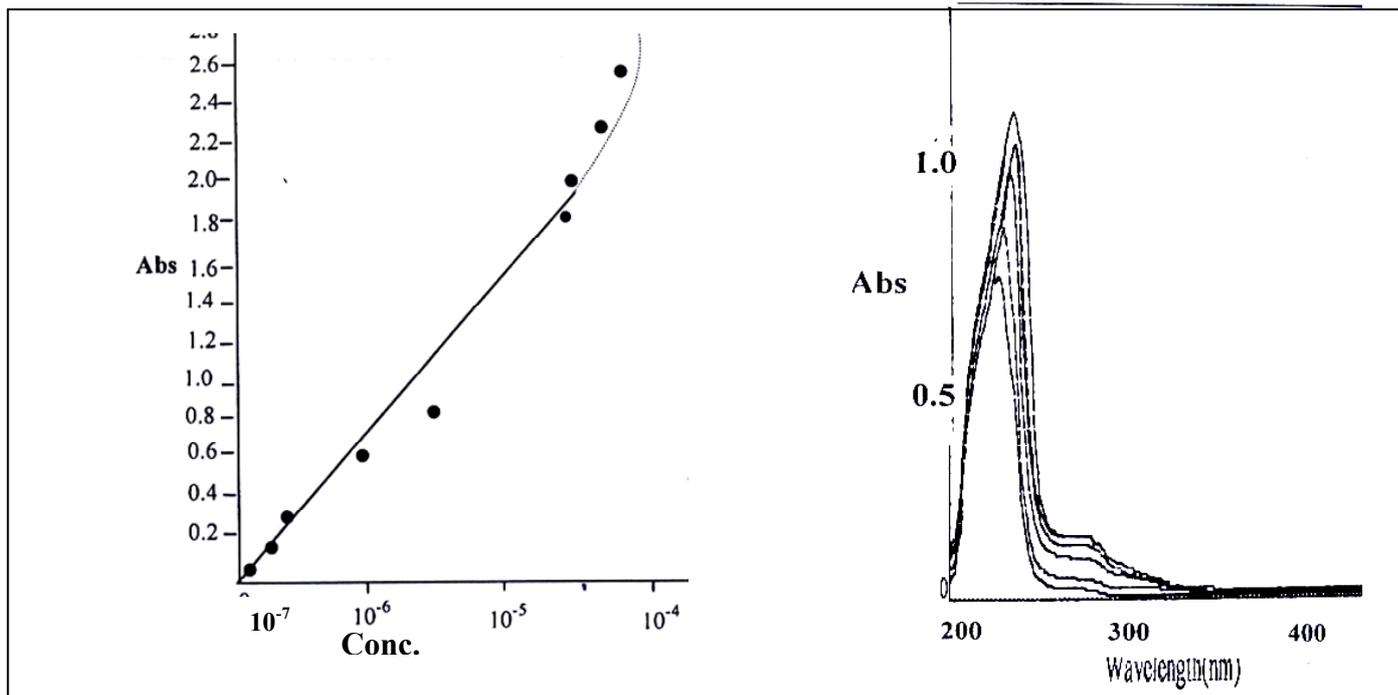
Substance	λ_1	A ₁	λ_2	A ₂
Ub ₀	211	0.62	264	1.12
Ub ₀ +Per	218	1.12	273	1.96
Ub ₀ +Tet	217	1.18	272	1.65

(1) ()
) Ub₀
 ((Ub₀) Q
 Ub₀ ⁽¹¹⁾ Jalil
 steric inductive effects CoQ₁₀
 , effects
) (-CH₃, -NH₃, -OH)
 , (-CN , -C=O ,
 . (Dispersion Forces)
 (Ub₀)Q (interaction) (1:1) (1:1)
 (16-14)()
 -3 (Doner)
 (2) . C) (Acceptor)
 ()
 (λ_{max}) -12
 . (13)

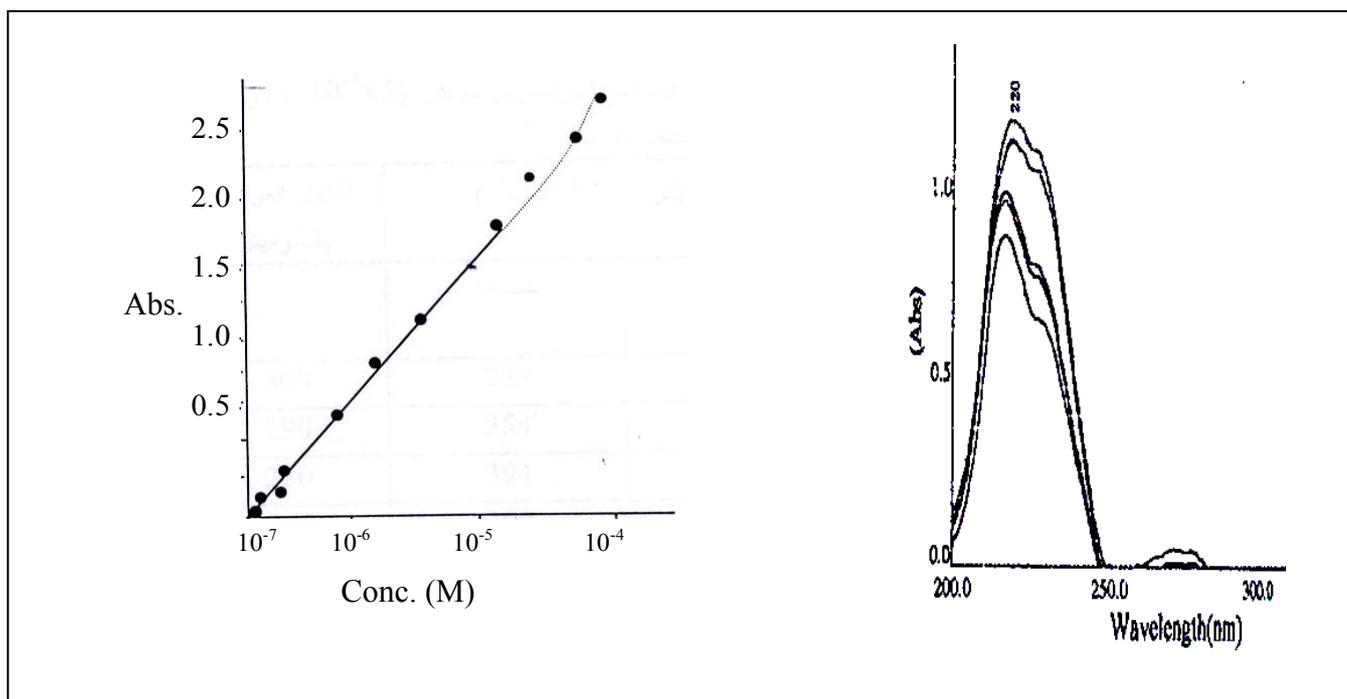
C : (2)

substance	λ_1	ϵ_1	λ_2	ϵ_2	λ_3	ϵ_3
Cyt.C	400	17340	520	10081	550	10162
Cyt.C+Per	403	6002	525	1233	552	10880
Cyt.C+Tet	401	3811	258	954	548	5140

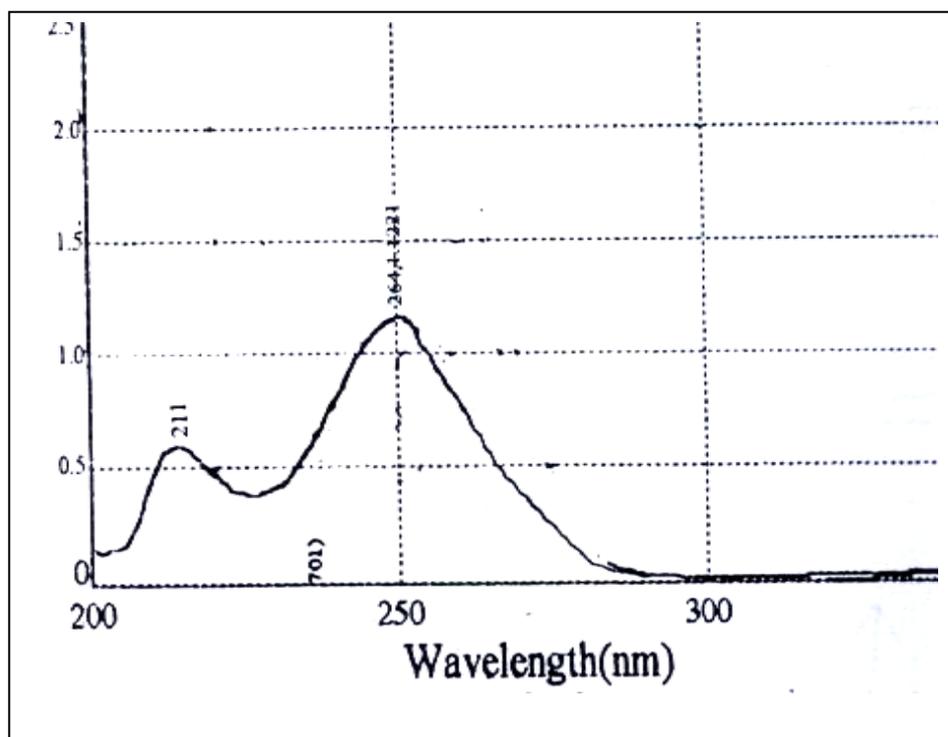




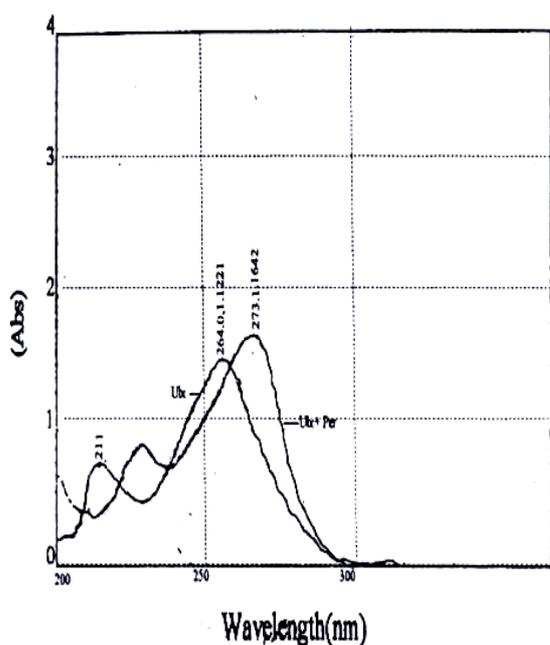
شكل (1) : منحنى معايرة مركب البيرمثرين في مذيب الهكسان



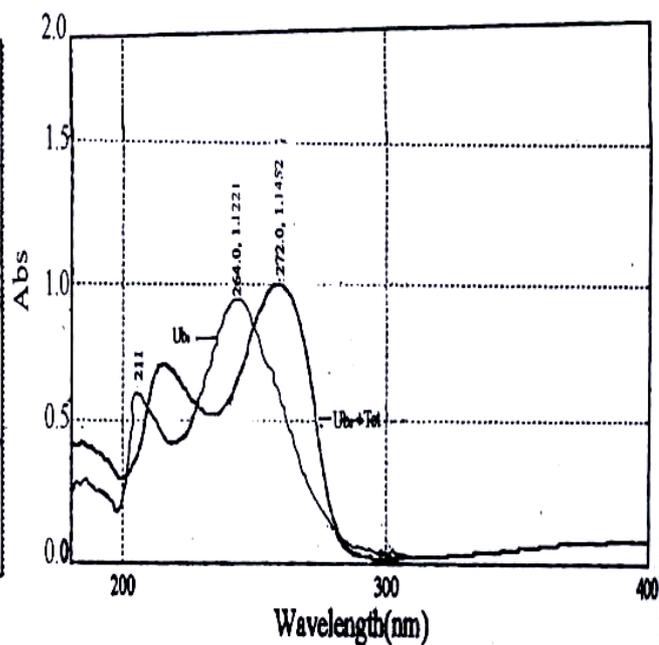
شكل (2) : منحنى معايرة مركب التترامثرين في مذيب الهكسان



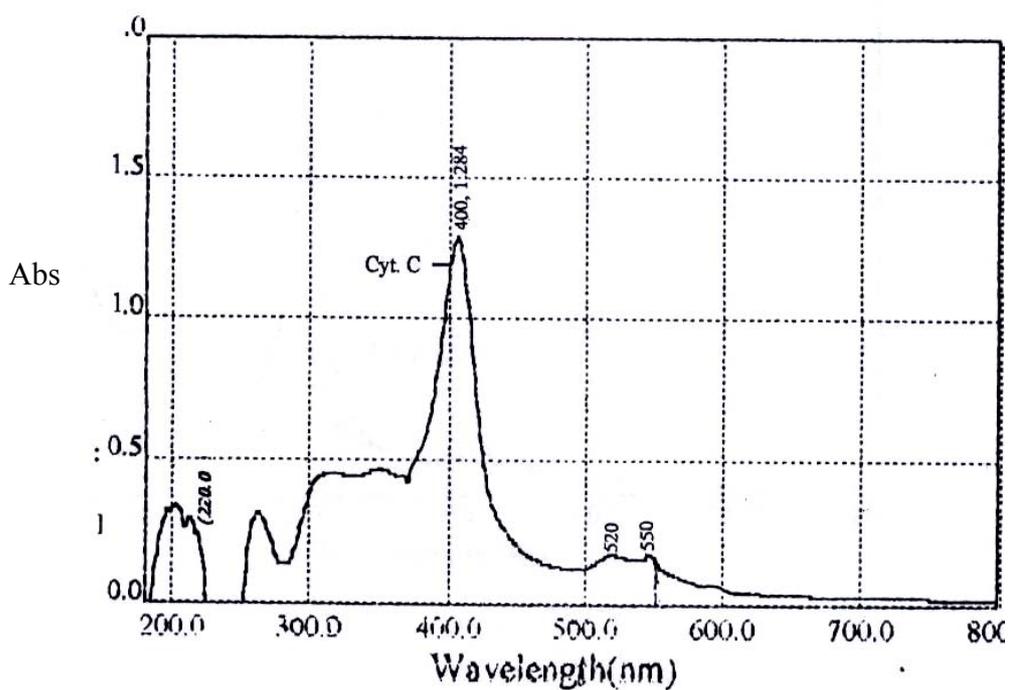
شكل (3) : طيف امتصاص شبيه مساعد الإنزيم Ub_0 في المنطقتين فوق البنفسجية والمرئية بمذيب الهكسان



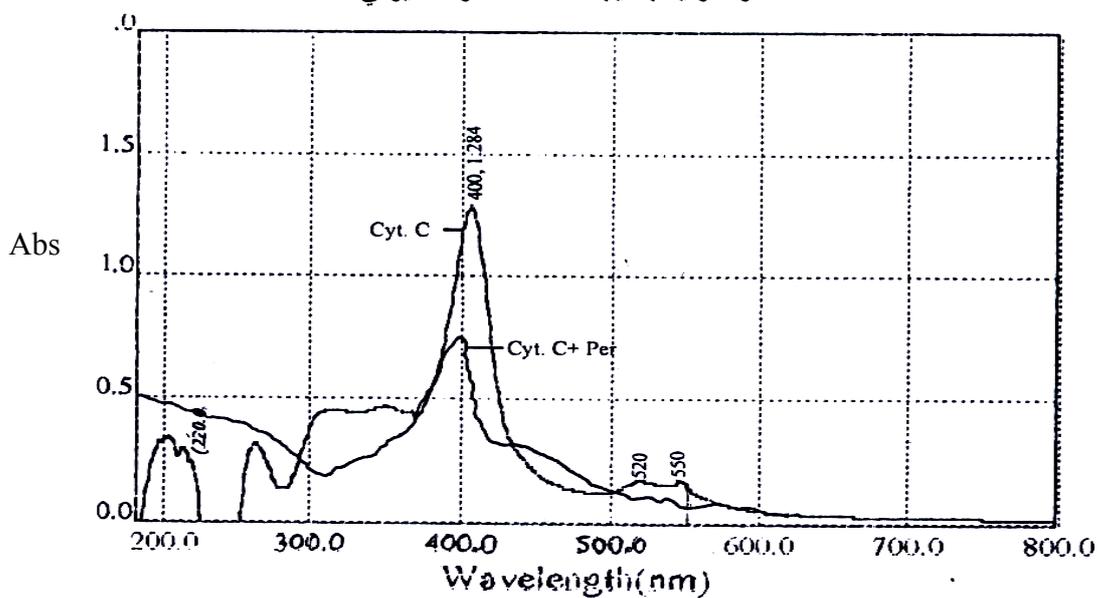
شكل (4) : طيف امتصاص مزيج $(Per.+Ub_0)$ في المنطقتين فوق البنفسجية والمرئية



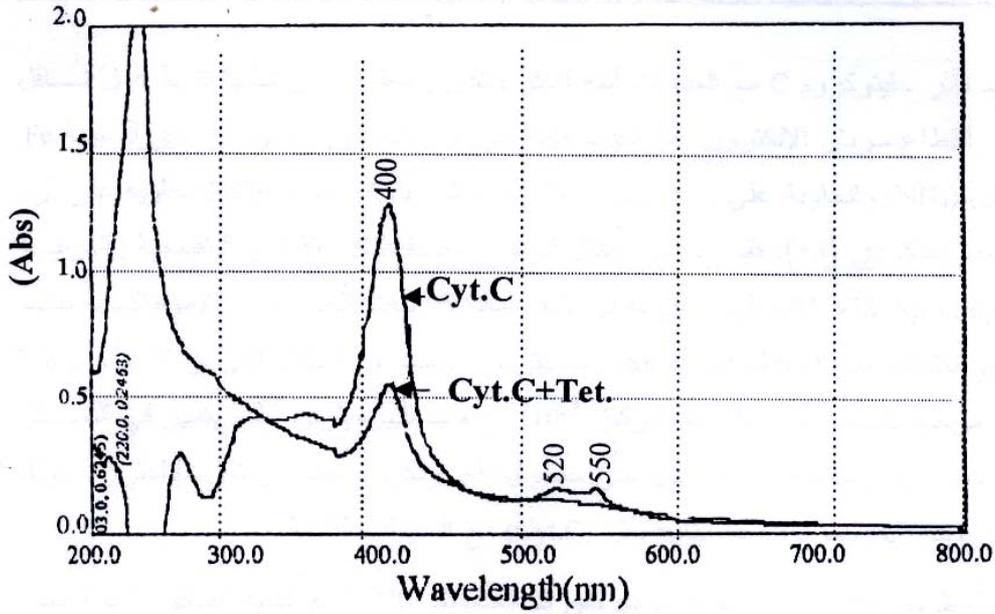
شكل (5) : طيف امتصاص مزيج $(Tet.+Ub_0)$ في المنطقتين فوق البنفسجية والمرئية



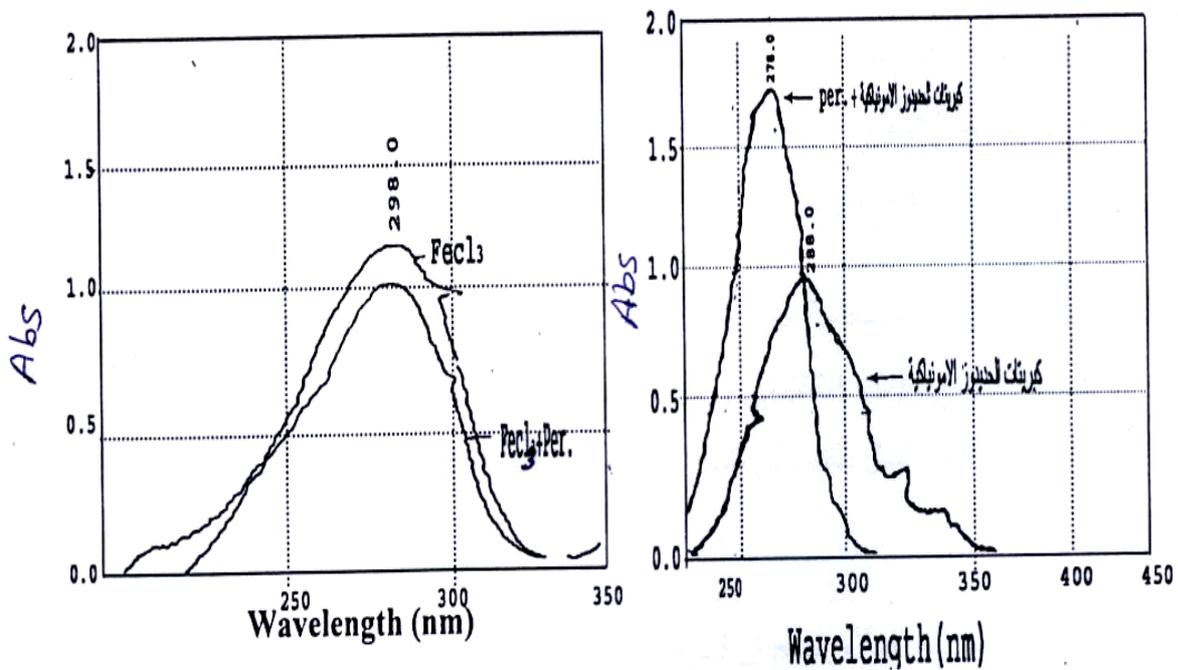
شكل (6) : طيف امتصاص الساييتوكروم C بشكله المختزل في المنطقتين فوق البنفسجية والمرئية بمذيب الماء المقطر اللايوني



شكل (7) : طيف امتصاص مزيج (Per.+Cyt.C) في المنطقتين فوق البنفسجية والمرئية



شكل (8): طيف امتصاص مزيج (Tet.+Cyt.C) في المنطقتين فوق البنفسجية والمرئية



شكل (9): طيف الاشعة فوق البنفسجية والمرئية للمركب $FeCl_3$ ومركب كبريتات الحديدوز الامونياكية ومعقد المركبين مع مبيد البيرمثرين per.

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المصادر

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