

GCMS A CHEMICALS MODERN METHOD TO CLASSIFICATION OF *Chrysomya bezziana*(OWS) IN IRAQ.

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ABSTRACT

New study for classification *Chrysomya bezziana* (OWS); order diptera by using GCMS (gas chromatography) as development method used first time in Iraq for taxonomy and separation of fly body compound at same little time, with paragraph show pick of quantity for each element in the cuticle of adult fly. Cold method used for separation compound by add 20ml of Hexsan to 20ml of a methanol in 50ml tube and shake carefully. Good Result been in this new method as it is first record of separation and classification chemically method with diagram for All compounds of Cuticles' % for each one with its chemicals traction at little time low than one hour and low price and low effort to Classified A species of (OWS) *Chrysomya bezziana*

INTRODUCTION

The old world screw fly (OWS Wcs F), *Chrysomya bezziana* is a member of the insect family Calliphoridae and is an obligate parasite of warm-blooded animals in the tropics and sub-tropics (21). *Chrysomya bezziana* Larvae causing cutaneous myiasis (strikes) on host with resulting loss of condition; maiming, infertility and death of the host [first case reported with *Chrysomya bezziana* in animals at Baghdad by Abdulrassl (19). (7) show there were 120789 cases of OWS in animals were reported till 2007 in all Iraq and 22 human cases in OWS. In human at Basra south of Iraq reported the first case (6). (8), reported *Chrysomya bezziana* OWS at (17) provenances.

(1) reported many cases of OWS at Basra province in animals. 2004 – 2006 there are 3453 cases by OWS recorded at Basra in domestic animals (buffalo, cow, sheep, camel, dogs) (2,3,4,5). Morphological classification were used in all studied to

Chrysomya bezziana diagnosis. (12), Analysis of insects cuticle of dipteran order can be used as a good method to identification and classification between different species of this order. (10) Use GAS chromatography technique to classify drosophila depend on cuticle carbon atom (11). (9) show that the study of cuticle hydrocarbon its easy method and best process to classification and identification between insects.

GCMS use for identify and quantify unknown compounds identifying unknown contaminants, identifying trace element in samples, identifying residual solvents and use for Environmental analysis (14). (15,16), show that GAS chromatography (GC) and mass spectrometry (MS) make an effective combination for chemical analysis. (18) at Basra used chemotaxonomy to classification of *Chrysomya megacephala*, *Chrysomyaalbiceps* by GCms instrument. (13,20,22). In IRAQ the

MATERIAL AND METHOD

Basra provenance divided to three areas (south, center, north). 30 local insects tripe separated at these area. Collection of calliphoridae fly from these trips with lead fly with all structure without damage as in other gum tripe (fig.1). adult fly collected send to Basra vet. Laboratory for classification and to Baghdad university museum and to Tarpet university of Iran for identification of fly. All result of classification show that its belonged to dipteran: calliphoridae, *Chrysomya bezziana* (OWS). 5th grams of classified adult fly were dried carefully and crushing well sent to agriculture college laboratory university of Basra. GC MS system used for separation and measuring components in compound material of cuticle to low PPM and ultratrace levels and its quantity as well as measuring the peak with chromatography for each compound.

Cold method are used in the application that add 20ml of hexane to 20ml of methanol to sample of crushed dry fly in test tube size 50ml and leave at room temperature over night, in order take blast to alcohol to enter inside cell cavity and make all material go outside of cells to the stock. 2ml take from sample after filtration and inserted in GC MS apparatus. Computer preview report have all composition elements percent of each one in a cuticle of adult dry fly *Chrysomya bezziana* clear by photography program used as classification and separation method. As well as classical processes of taxonomical ways by used anatomical microscope camera Lucida to indicate species. Report of GCMS computer

show there are 40 elements have with different degree of consternation in cuticle structures with the name of those elements .

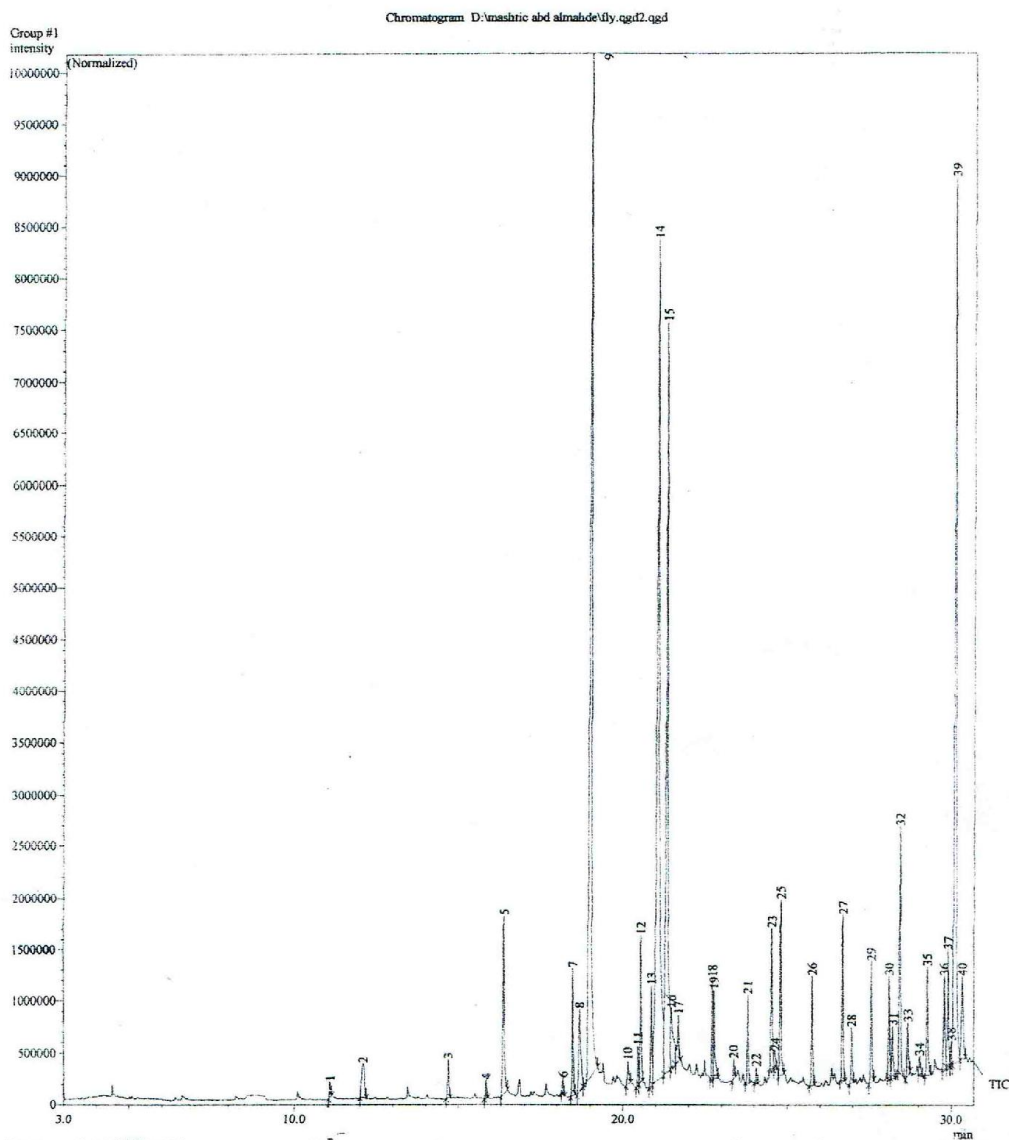
RESULT

GC / MS analysis (gas Chromatography mass spectrometry) which used in this investigation to identify the precise composition of a sample was a materials analysis technique and to quantify its elements, (innova TECH,2010 ,Japan). GC\MS instrument used for many application unless taxonomy that is we do. Result show that GCMS system technique takes 40 elements from the cuticle of *Chrysomya bezziana* (OWS) species; Calliphoridae; Diptera when used as sample for classification of its. This result show it's a first modern analytical method in Iraq that's used GCMS to combined the separations compound and identify its within same sample (cuticle) with measuring each element percentage with trace photograph (three in one) at same time within 40 mints. Elements are (octadec-9-enic acid 19.10% ; 1-(+) ascorbic acid 2-6-dihexadecadecanoate 19.05% ; 17-(1,5 -dimethylhexyl)-10,13-dimethyl-1-2,3 14.29% ; Octadecanoic acid 11.41% ; Hexatriacontane 2.87% ; tetradecanoic acid 2.27% ; Tetratriacontane 2.01% ; Hexatriacontane 1.85% ; cyclohexanecarboxylic acid, undec-10-enyl 1.69% ; thiophene,3-methyl-5(2-methyldecyl)-2-tr 1.54% ; 9-octadecenoic acid (z) -methyl ester 1.53% ; cyclopentadecanone, 2-hydroxy- 1.50% ; Hexatriacontane 1.37% ; Hexadecanamide 1.34% ; Hexatriacontane 1.32% ; tetrapentacontane 30% ; Hexadecanoic acid, methyl ester 1.28% ; octacosane 1.25% ; tetratriacontane 1.22% ; glycidol stearate 1.17% ; Hexacosane 1.16% ; Octadecanoic acid, methyl ester 1.11 ; Tetracosane 1.00% ; And all of another element are less than 1 percentage. As well as classical manual method of classification by anatomical microscopy and draw with Lucida camera are doing to identified our diagnosis. (paragraph 1).

DISCUSSION

Chrysomya bezziana was important Species of Genus *Chrysomya* which effect in Human and Animals Healthy causes Myiasis .Three species of Genus *Chrysomya* were recorded in Basra at 2000,Alhelfi(2001),As well AS Thamir,(2012) Add A new species (*Ch.putoria*)of same Genus . Morphological Taxonomy between these types need for long time and many apparatus and chemicals and many process to reach to fit classification .GCMS Classification New method are A simple with many

process (isolation ,separation ,classification ,type of compounds %) in half hours and with universal report, make this new investigation Batter than Classical method by use morphological classification .



Paragraph 1 : chromatogram of peaks of 40 elements in cuticle of *chrysomya bezziana* .

Table (1) : % of elements and its Name, time, Area, Peaks cuticle f *Chrysomya bezziana*.

Peak	R.Time	Area %	Name
1	11.088	0.18	Benzonic acid, 4-(1-methylethyl)-
2	12.090	0.86	Cycloheptasiloxane, tetradecamethyl-
3	14.690	0.47	Cyclooctasiloxane, hexadecamethyl-
4	15.840	0.19	Methyl tetradecanoate
5	16.376	2.27	Tetradecanoic acid
6	18.193	0.16	9-Hexadecenoic acid, methyl ester, (Z)-
7	18.483	1.28	Hexadecanoic acid, methyl ester
8	18.691	1.50	Cyclopentadecanone, 2-hydroxy-
9	19.011	19.05	1-(+)-Ascorbic acid 2,6-dihexadecanoate
10	20.149	0.33	Heptadecanoic acid
11	20.465	0.41	Methyl 18-fluoro-octadec-9-enoate
12	20.552	1.53	9-Octadecenoic acid (Z)-, methyl ester
13	20.874	1.11	Octadecanoic acid, methyl ester
14	21.050	19.10	Octadec-9-enoic acid
15	21.334	11.41	Octadecanoic acid
16	21.483	1.34	Hexadecanamide
17	21.695	0.72	Tetracosane
18	22.723	1.17	Glycidol stearate
19	22.769	1.00	Tetracosane
20	23.372	0.22	9-Octadecenamamide, (Z)-
21	23.801	0.98	Tetratriacontane
22	24.057	0.17	Oleoyl chloride
23	24.529	1.69	Cyclohexanecarboxylic acid,undec-10-enyl
24	24.642	0.29	Cyclohexanecarboxylic acid, heptadecylest
25	24.797	2.01	Tetratetracontane
26	25.753	1.22	Tetratriacontane
27	26.677	1.85	Hexatriacontance
28	26.963	0.65	Hexatriacontane
29	27.568	1.37	Hexatriacontane
30	28.110	1.16	Hexacosane
31	28.217	0.65	Z-14-Nonacosane

32	28.432	2.78	Hexatriacontane
33	28.681	0.69	Hexatriacontane
34	29.046	0.23	13,17,21-Trimethylheptatriacontane
35	29.267	1.32	Hexatriacontane
36	29.774	1.25	Octacosane
37	29.898	1.54	Thiophene, 3-methyl-5-(2-methyldecyl)-2-tr
38	30.008	0.28	Tetratriacontane
39	30.097	14.29	17-(1,5-Dimethylhexyl)-10,13-dimethyl-2,3
40	30.345	1.30	Tetrapentacontane
41		100.00	

طريقة حديثة لتصنيف الذبابة الحلزونية للعالم القديم (*Chrysomya bezziana* (OWS))

كيمياويا بجهاز ال GCMS في العراق

مشتاق عبد المهدي عزيز الحلفي، مفيد عبداللطيف حبيب، ناصر عبد علي المنصور

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الخلاصة

اوضحت الدراسة استخدام طريقة حديثة لتصنيف ذبابة العالم القديم (كرايسوما بيزيانا) باستخدام جهاز الجي سي ماس لقياس كروماتو الغاز، وهي طريقة لأول مرة في العراق لتصنيف ذبابة العالم القديم *Chrysomya bezziana* وكذلك لفصل مكونات جسم البالغات وكمياتها % خلال جهاز ووقت واحد في اقل الساعة مع تقديم تقرير مفصل بكل المكونات بمخطط. وتعتبر هذه الطريقة التصنيفية الكيماوية بديلا عن التصنيف المظهري الخارجي للبالغات. وبينت النتائج ان عملية التصنيف الكيماوي الجديد لمكونات جسم الحشرة (الكيوتكل) افضل من طريقة التصنيف المظهري للبالغات من سرعة انجاز التصنيف بوقت لايزيد عن ساعة واحدة، واقل كلفة واكثر دقة مع اعطاء تقرير شامل بعزل و فصل المكونات للجسم وكمياتها بنسب مؤبه لكل مادة كيميائية تدخل بمكونات الكيوتكل كصفة تصنيفية للنوع الواحد تحدد بجهاز واحد.

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