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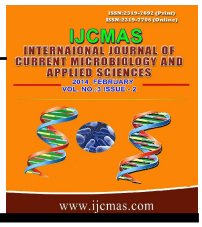

Original Research Article

Seroprevalence of Human CytomegaloVirus (HCMV) in aborted women in Baghdad province

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A B S T R A C T

The studies were carried out on electrochemical oxidation to degrade the synthetic effluent containing ethyl benzene. The electrochemical oxidation was carried out in galvanostatic mode with lead oxide as anode and a stainless steel plate as the cathode in the presence of 2 g/L of NaCl has been added as a supporting electrolyte. The electrochemical treatment was optimized by response surface methodology (RSM), which results in 73.42 % was the highest percentage of Chemical Oxygen Demand(COD) removal, and the optimum conditions were satisfied at current density 1.82 A/dm^2, time 2 hrs, flow rate 10 L/hr, volume 3.63 L occurs at minimum power consumption 15 kWhr/kg COD. This method appears to be a promising technology and has potential application for environmental remediation. Human cytomegalovirus (HCMV) was considered as one of the most important infectious agents that causes different health problems to human. This study was conducted to estimate the prevalence of infection with this virus among aborted women. These women included 152 aborted women; other 50 serum samples were collected from apparently healthy women from same clinics and age range. Enzyme Linked Immuno Sorbent Assay test (ELISA) was used to detect anti-human cytomegalovirus IgM and IgG. The percentages were 85% and 10% among aborted women for both IgG and IgM respectively.

Keywords

COD reduction;
Electrochemical;
RSM;
Ultra Violet.

Introduction

Human Cytomegalovirus (HCMV), also known as Human Herpesvirus 5 (HHV-5) belongs to the family Herpesviridae, and is a member of the Beta herpesvirinae. This virus like all of the other herpes viruses establishes latency within the human host. HCMV primary infection results in a persistent or latent infection that can be established within various tissues, peripheral blood mononuclear cells (PBMCs), and endothelial cells (Hodinka, 2007; Ho, 2008). A total of 5% of all congenitally infected infants had severe cytomegalic inclusion disease, while another 5% have mild HCMV disease. The majority of infants would have a

subclinical infection (Stagno, 2007). Seroprevalence of HCMV in the worldwide population ranges between 45-100%, the highest prevalence is in South America, Africa and Asia and the lowest is in Western Europe and the United States (Drew, and Lalezari, 1999; Cannon et al.,2010). The rate of seropositivity of IgG ELISA antibodies of pregnant women in Turkey was reported to be 98.5 % (Ali et al., 2007) and 84% in Spain (Estripeant et al., 2007).

Materials and Methods

The current study was done in the Infertility Clinic of Kamal Al-Sammaraee Hospital and Al-Yarmouk teaching hospital in Baghdad. The study was approved by the Babylon College of Medicine and informed consent was obtained from patients. Patient groups consisted of one hundred fifty two (152) of aborted women; the age was ranged between (16-45years, Mean±SD 30.5±8.8). (152) serum samples obtained from the studied groups to achieve HCMV serostatus that includes anti-HCMV IgG and IgM levels by using the ELISA test. Cytomegalovirus IgM and IgG ELISA test kit, Diagnostic automation (Biokit, Barcelona, Spain) and ELISA test kit. (BioCheck, Inc. Foster City). Samples were prepared according to method of (Boeckh, and Boivin, 1998; Koneman et al., 2006). The tests were done according to manufacturer.

Results and Discussion

Seroprevalence of Anti- HCMV in control group

Table (1) shows the results of ELISA test in control group, out of 50 apparently healthy women 35(70%) showed seropositive for anti- HCMV IgG, whereas none of these women showed seropositivity for anti- HCMV IgM with significant difference between two values. These results considered to be compatible with other result (Abdul-Karem et al., 1989) who indicated that the prevalence of Anti-HCMV IgG among healthy women in Iraq were 94.5%.

Seroprevalence of anti-HCMV IgG and IgM among different age classes of aborted women.

Table (2) illustrates the serostatus of different age classes of aborted women to HCMV. The age 41-45 years old may be regarded as the most age class which showed high prevalence of anti-HCMV antibodies which represent(100% IgG for and 11% for IgM), while the youngest age classes (16-20) years old showed the least prevalence of anti-HCMV IgG antibodies (75%),but the highest for IgM (17%) without significant differences. These results can be attributed to age; the more years women have, the more chance of exposure to the virus she faces. These results were compared with the recent results (Yasir, 2012) showed higher percentage of positivity at age classes (27-32), also (Sotoodeh et al., 2009) showed 94% of positivity at age 25-34.

These outcomes were in agreement with (Sharief, 2005) who showed the highest percentage 100% at the age 35-44 years. The high seroprevalence in older classes was reported in developed countries such as a united states where stated that 80% at age 35-40 years old women have anti-HCMV IgG compared with50-80% in younger ages (Gold, and Nankervis, 2007). Age is a determinant factor influencing viral seroprevalence, because there is an idea that the increasing trend in

IgG and IgM seropositivity rate with age (Gratacap et al., 1998; Ali and Sharief, 2007). IgG immunoglobulin was reflected the previous infection. The presence of it doesn't prevent the re-infection or reactivation of latent infection, but may reduce the severity of pathogenesis (Al-izi, 2002; Jawetz et al., 2007). While IgM immunoglobulin was considered as evidence of recent or acute infection which is formed immediately after infection and disappeared after short period 16-20 weeks (Goodrich et al., 2004).

For IgM level among aborted groups it was shown from the table (4-3) the highest percentage which occurs in the age 31-35 that represent 4 (12%), and 26-30 that represent 3 (8%). These results considered to be comparable with other who shows a high percentage at age (21-26) years (Yasir, 2012), and supported with that show high seropositive number at age 25-34 which represent 11 (24.4%)(Sharief, 2005), and a higher percentage at age (35-44) years which represent 10 (55.6), also with other that show high IgM seroprevalence between (30-39) years (Arabpou et al., 2007).

Occurrence of anti-HCMV IgM among primary and recurrent abortions.

From the table (3) that show the rate of seropositive IgM among women of primary abortion was 9 (11%) out of 81 the total primary abortion case .The highest incidence of it at age 41-45 years which represent 1 (25%) followed by 36-40 years which represent 2 (20%). In case of recurrent abortion , the rate of IgM seropositive was present at age 16-20 years which formed 1 (20%) followed by age group 31-35 years 2 (13%) with significance between age groups. The current results were comparable with the results of Yasir that showed high prevalence of IgM at age 15-20 years of primary abortion while in recurrent falls at age 21-26 years (Yasir, 2012), also comparable with Sharief, who showed that aborted women underwent habitual abortion (more than three times) show a higher percentage of IgM seropositive compared to those had less than three times (Sharief, 2005).

There was an accordance with current results who showed an increase in prevalence of HCMV antibodies with age, this tendency can refer to many factors such as multiple pregnancies, abortion, physiological and hormonal changes and increase possibility of virus accessibility with increase age (Fowler et al., 1992) .

Occurrence of anti-HCMV IgG among primary and recurrent abortions.

The seroprevalence of IgG antibodies among women with primary abortion was 72 (89%) out of 81 and most of them 22 (92%) at age group 21-25 and 4 (100%) at age 41-45 years as shown in table (4-5).The seroprevalence of IgG antibodies among recurrent abortions was 57 (80%) out of 71 the total number, most of them falls at age 41-45 years which represent 5 (100%) followed by age group36-40 years represent 12 (92%) with significant difference between age classes and within age groups. These outcomes were in line with Sharief, who showed the same results of aborted women with primary abortion that carry high titer of IgG (Sharief, 2005; Arabpou et al., 2007; Prescott et al., 2002) and disagree with Yasir, who showed high IgG seropositive cases with recurrent abortion (Yasir, 2012).

Table.1 Control group serostatus

Control women	**Total No**	**Seroprevalence of Anti-HCMV IgG**				**Seroprevalence of Anti-HCMV IgM**			
Women with normal health and pregnancy	**50**	**IgG +**		**IgG –**		**IgM +***		**IgM –**	
		No	**%**	**No**	**%**	**No**	**%**	**No**	**%**
		35	70	15	30	0	0	50	100

*P<0.05

Table.2 Seroprevalence of HCMV in the abortion group

Age/year	Total No	**Anti HCMV IgG**				**Anti HCMV IgM**			
		Positive cases*		Negative cases		Positive cases*		Negative cases	
		No	%	No	%	No	%	No	%
16-20	12	9	75	3	25	2	17	10	83
21-25	37	31	84	6	16	3	8	34	82
26-30	38	32	84	6	16	3	8	35	92
31-35	33	27	82	6	18	4	12	29	88
36-40	23	21	91	2	9	2	9	21	91
41-45	9	9	100	0	0	1	11	8	89

*P>0.05

Table.3 Seroprevalence of anti-HCMV IgM among primary and recurrent aborted women

Age groups	Primary abortion		Total	Recurrent Abortion		Total
	IgM +	IgM -		IgM +	IgM –	
16- 20	1 14%	6 86%	7 58%	1 20%	4 80%	5 42%
21-25	2 8%	22 92%	24 65%	1 8%	12 92%	13 35%
26-30	1 6%	17 94%	18 47%	2 10%	18 90%	20 53%
31-35	2 11%	16 89%	18 55%	2 13%	13 87%	15 45%
36-40	2 20%	8 80%	10 43%	0	13 100%	13 57%
41-45	1 25%	3 75%	4 44%	0	5 100%	5 56%
Total	9 11%	72 89%	81 53%	6 8%	65 92%	71 47%

P<0.05 between primary and recurrent and age classes.

Table.4 Seroprevalence of anti-HCMV IgG among primary and recurrent aborted women

Age groups	Primary abortion *		Total	Recurrent Abortion*		Total
	IgG +	IgG -		IgG +	IgG –	
16-20	6 86%	1 14%	7	3 60%	2 40%	5
21-25	22 92%	2 8%	24	9 69%	4 31%	13
26-30	16 89%	2 11%	18	16 80%	4 20%	20
31-35	15 83%	3 17%	18	12 80%	3 20%	15
36-40	9 90%	1 10%	10	12 92%	1 8%	13
41-45	4 100%	0	4	5 100%	0	5
Total	72 89%	9 11%	81 53%	57 80%	14 20 %	71 47%

P<0.05 between primary and recurrent and age classes.

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