

دراسة تأثير بعض الأحماض الأمينية على النشاط النوعي لتوليد غاز ثاني أكسيد الكربون
بواسطة بكتيريا *Leuconostoc mesenteroides subsp. dextranicum* المعزولة من
اللبن الخام

المخلص		<i>Leuconostoc</i> sp	
<i>Leuconostoc</i>	(L4)	CO ₂	
	CO ₂	43.43	<i>mesenteroides</i> subsp. <i>dextranicum</i>
	0.94		HB1
	CO ₂		7.27
			(Warburg)
%60.7	%30.27	L ₄	
	HB2	%21.32	%22.85
		%0	%0
		HB1	%16.58
			%90.42
			:
		<i>Leuconostoc</i>	:

المقدمة		<i>Leuconostoc</i>	
<i>Leuconostoc</i>	CO ₂		
			(Patricia <i>et al.</i> , 1998, Ercolini <i>et al.</i> , 2003)
			(Wood 1998, Barrango <i>et al.</i> , 2002)
			(Steinkraus 1996, Kim <i>et al.</i> , 2005)
			(Yimin <i>et al.</i> , 1998)
			:
<i>Leuconostoc mesenteroides subsp. dextranicum</i>			(Fergal <i>et al.</i> , 2003)
	HB2, HB1,	Jeanes)	
	(L ₄)	CO ₂	(1977, Devoyod <i>et al.</i> , 1988)
	Dijon		
	(Accolas & Auclair 1967)	CO ₂	
	(Mathot <i>et al.</i> , 1994)	Holmes <i>et al.</i> , 1968;)	<i>Leuconostoc</i>
			(Gendrot <i>et al.</i> , 2002, Smit <i>et al.</i> , 2004
			(1996) Kihal
MRS			
% ,	% ,		CO ₂

CO₂ % , % , % ,
. % , % ,
. % ,
: - ° , pH
(Warburg) :
(Larpent & Courgand 1990)
K₂HPO₄ • Elliker *et al.* (Kemppler & Mac 1980)
.MnCl₂ , pH , (al. 1956, Mayeux *et al.* 1962
• Bauer *et al.*, 1966 and Bouquien *et al.*
(al., 1989
-
•
° . 15 ° ()
- -
MRS MRS
MRS , ()
° (Holmes *et al.*, 1968) %
°
/ /
°
: - ()
() MRS
-
°
Accolas *et al.* (1971)
: -
10D₀ NaOH)
.(
-
Kihal (1996)
()

CO₂ - -

() (B) ,(A)

CO₂ Kihal (1996)

CO₂

النتائج والمناقشة

(r)

HB2, L4, HB1

HB1

()

(CO₂ ,) CO₂ (())

HB₂ L₄ vancomycine

Benkerroum *et al.*, 1993, Mathot *et*)

HB1, HB2 (*al.*, 1994

L₄

HB₂

() (D) (C)

CO₂

()

Leuconostoc

mesenteroides subsp. *dextranicum*

HB₂ HB₁ L₄ :

HB ₂	HB ₁	L ₄	
+	+	+	-
-	-	-	Cat -
-	-	-	Oxy -
+	+	+	β. gla -
+	+	+	-
-	-	-	% -
+	±	-	pH = 4.4 : -
±	±	±	pH = 9.6
±	±	±	% , NaCl -
-	-	-	-
+	+	+	-
+	+	+	-
+	+	+	-

:

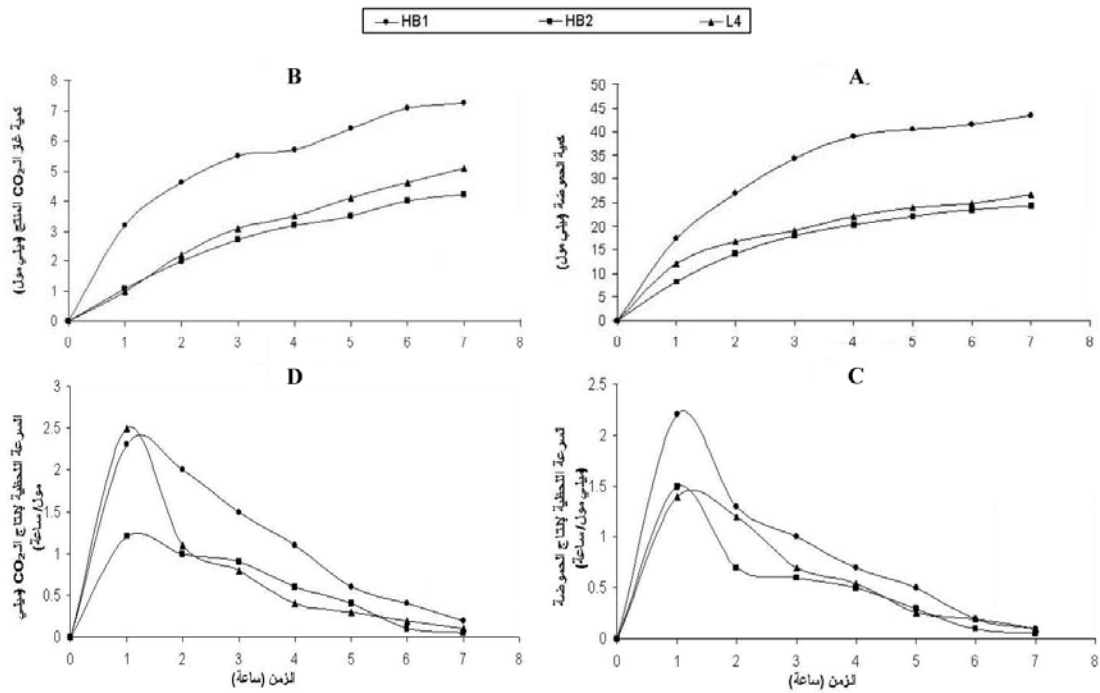
HB ₂	HB ₁	L ₄		
-	-	-	L.Arabinose	
+	+	+	D.Fructose	
+	+	+	Trehalose	
d	d	d	Cellobiose	
d	d	d	Dextrose	
+	+	+	Maltose	
+	+	+	Sacharose	
+	+	+	Lactose	
+	d	-	Rafinose	
+	d	+	Glactose	
+	+	+	Luvelose	
+	d	-	Manitole	
d	d	+	Sorbitole	

: ± d : - : +

:

HB ₂	HB ₁	L ₄			
			30 µg	VAN	Vancomycine
			10 UI	S	Streptomycine
			10 UI	GM	Gentamycine
			15 µg	PT	Pristinamycine
			30 UI	TE	Tetracycline
			30 µg	Na	Ac.Nalidixine
			200 µg	SSS	Sulfamides
			15 µg	VG	Virginiamycine
			25 µg	AMX	Amoxilline
			30 UI	OT	Oxytetracycline
			30 µg	AN	Amikacine

: . : :



CO₂

:

CO₂

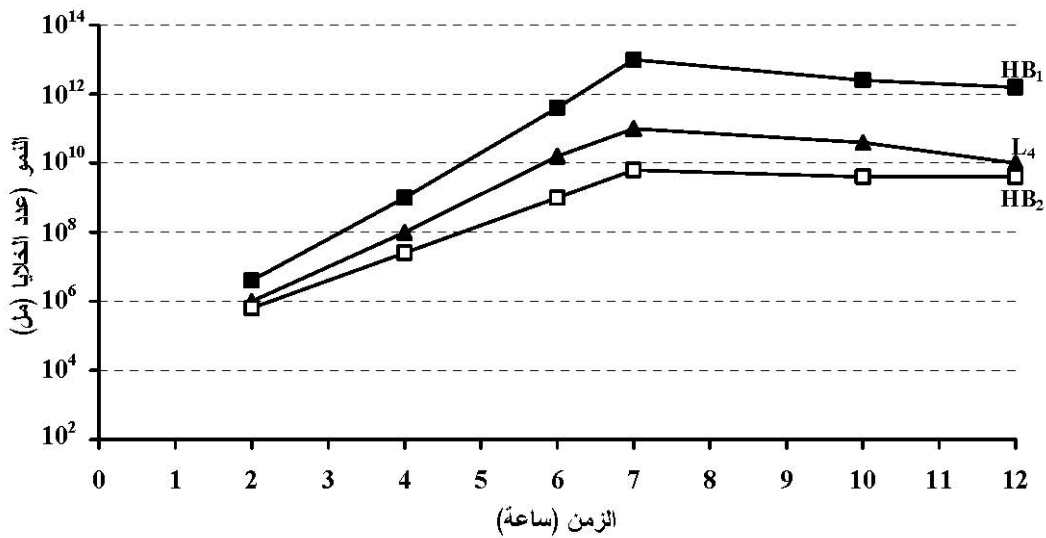
Salou *et al.*, 1994, Bourel *et*)

(*al.*, 2001

CO₂

()

(, ,) L₄ HB₂ HB₁
 (, ,) / (,
 /CO₂
 CO₂



L₄ HB₂ HB₁

:

(,) Cys (,) Met (,) Val (,)
 .(,) Trp

HB2

CO₂

(, ,)

Asn Met Phe Cys (, ,) ×

Val Glu Trp. /

Trp Cys Val CO₂

CO₂ Kihal (1996)

L₄ HB₁

CO₂

HB₁ ()

()

(catabolite repression)

CO₂ L₄ Val :

Asn Phe Cys Trp

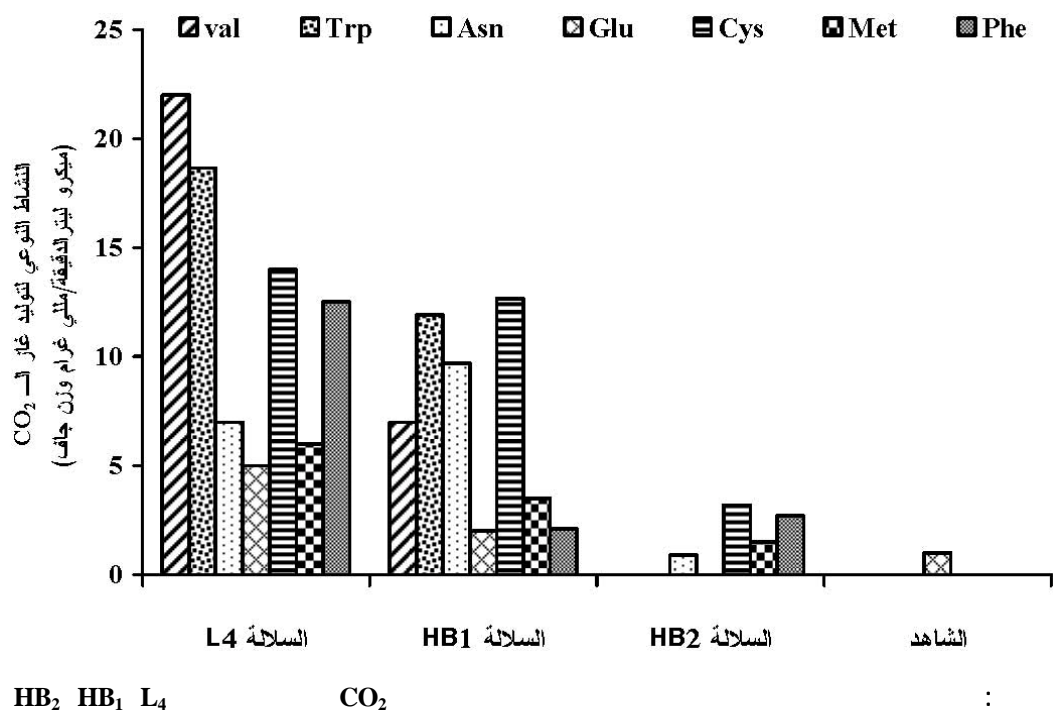
Glu Met

CO₂ / /

(1967) Garvie

HB₁

Leuconostoc Asn :



HB2 HB1 L4

CO₂

:

(/ /μM) CO ₂					
HB ₂		HB ₁		L4	
(% ,) ,	Cys	** (% ,) ,	Cys	,	Val
(% ,) ,	Phe	(% ,) ,	Trp	,	Trp
(% ,) ,	Met	(% ,) ,	Asn	,	Cys
(% ,) ,	Asn	(% ,) ,	Val	,	Phe
	Glu	(% ,) ,	Met	,	Asn
	Val	(% ,) ,	Phe	,	Met
	Trp	(% ,) ,	Glu	,	Glu

**

L4

ATP

()

(Cogan 1981, Cogan 1987)

Kihal (1996)

)

L. paramesenteroides

(

Holmes

L. mesenteroides

(1968)

MRS

Leuconostoc .citrovorum

CO₂

% ,

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% , CO₂

Smith

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(1992) Cogan

MnCl₂ NAD

H₂CO₃

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Mn²⁺

.CO₂

L.

mesenteroides susbsp cremoris

Dong

pH

(2000)

L. mesenteroides

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:

:

(,)

pH

° -

/ 1.2

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)

(

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Effect of Some Amino Acids on CO₂ Production by *Leuconostoc mesenteroides* subsp. *dextranicum* Isolated from Raw Milk

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ABSTRACT

The members of the genus *leuconostoc* are heterofermentative lactic acid bacteria and play an important role in the dairy industry. The most important functions of this bacteria are their ability to produce CO₂ and flavour compounds through lactose and citrate metabolisms. The gazogenesis activity of these genus is responsible for the type of slits open formed in cheese curd .

The present study aimed to investigate the effect of some amino acids on gazogenesis activity. Two strains of *Leuconostoc mesenteroides* subsp. *dextranicum* were isolated from raw cow milk of Ain-Turk-region. - Oran - Algeria. The maximal speeds of lactate and CO₂ production after 1 hour incubation at 30°C were 2.2 mM lactate/hr and 2.3 mM CO₂/hr, respectively with correlation coefficient of 0.94.

The amino acids valine, tryptophan, cysteine and phenylalanine exhibited the most efficient stimulating effect on CO₂ production measured by Warburg apparatus. The gazogenesis activity of the two isolated strains as percentage of gazogenesis activity of the standard strain L₄ were: 30.27%, 60.7%, 90.42% and 16.58% for the strain HB₁ and 0%, 0%, 22.85%, 21.32% for the strain HB₂ for valine, tryptophan, cysteine and phenylalanine, respectively.