



LABORATOIRE
PHILIPPE AUGUSTE

LABORATOIRE PHILIPPE AUGUSTE
119 avenue Philippe Auguste
75011 PARIS – FRANCE
Tél : (33) 01 43 67 57 00 Fax : 01 43 79 00 27

HORAIRES D'OUVERTURE
Lundi-Vendredi : 7h30 à 18h30
Samedi : 8h00 à 13h00
Prélèvement à domicile sur rendez-vous

Site internet : www.labbio.net / Mail : contact@labbio.net

SCFA - BACTERIA OVERGROWTH EXAMPLE

URINARY SHORT CHAIN FATTY ACIDS

Ion chromatography

BMI 25.2
(Body Mass Index)

↑ Formate 15 mg/24h (<10)
(HCOO⁻)

Formate is issued from methanogenic archebacteriae and is associated with gut inflammation.

Acetate 280 mg/24h (>150)
(CH₃-COO⁻)

Acetate biosynthetic pathway is largely distributed among majority of microbiota species.

Propionate 254 mg/24h (>80)
(CH₃-CH₂-COO⁻)

Propionate production is restricted to propiogenic species distributed among different microbiota phylum.

↓ Butyrate 0 mg/24h (>80)
(CH₃-CH₂-CH₂-COO⁻)

Butyrate production depends on some butyrogenic species distributed among different microbiota phylum.

↑ Lactate 357 mg/24h (0-50)
(CH₃-CHOH-CHOH-COO⁻)

Lactate results from rapid fermentation of incompletely digestible carbohydrates by especially bifidobacterium and lactobacillus species. Lactate is healthy promoting only when converted into Butyrate by "cross-feeding" bacterias.

↑ Isobutyrate 130 mg/24h (10-40)

Branched SCFAs issued from BCAA valin microbiota fermentation. Indicator of dietary protein intake.

Isovalerate 0 mg/24h (20-70)

Branched SCFAs issued from BCAA/leu microbiota fermentation. Indicator of dietary protein intake.

Production of SCFAs 534 mg/24h

Distribution

Reference values are issued, for these three SCFAs, from distribution in gut lumen of western diet fed individuals.

Ref. Val.

Acetate	52 %	(50-70)
Propionate	48 %	
Butyrate	0 %	

Propionate/Butyrate ratio 0.91 (<0.40)

This ratio reduces lipogenic, adipogenic and weight gain promotion of Acetate.

Branched/Linear SCFAs ratio 0.2

Index of protein part in dietary intake.

As Butyrate is mainly consumed by gut mucosa, the significance of its absence in plasma associates low fiber intake and low or absence butyrogenic microbiota species, as Ruminococcus bromii, Faecalibacterium prausnitzii, Eubacterium rectale and Eubacterium hallii.

High plasma Lactate level resulting from rapidly fermentable, partially digestible carbohydrates increased consumption associated with reduced "cross-feeding" butyrogenic microbiota bacterias that converts it in Butyrate.

Increased overall production of Short Chain Fatty Acids

Suggestive of bacteria overgrowth in the lumen of terminal gegenom and colon

High plasma Lactate level resulting from rapidly fermentable, partially digestible carbohydrates increased consumption associated with reduced "cross-feeding" butyrogenic microbiota bacterias that converts it in Butyrate.

AP0BE

SCFAS - BACTERIA OVERGROWTH EXAMPLE

URINARY SHORT CHAIN FATTY ACIDS

Ion chromatography

BMI **31.7**
(Body Mass Index)

↑ Formate <small>(HCOO⁻)</small>	17 mg/24h	(<10)	
<i>Formate is issued from methanogenic archebacteriae and is associated with gut inflammation.</i>			
Acetate <small>(CH₃-COO⁻)</small>	292 mg/24h	(>150)	
<i>Acetate biosynthetic pathway is largely distributed among majority of microbiota species.</i>			
Propionate <small>(CH₃-CH₂-COO⁻)</small>	287 mg/24h	(>80)	
<i>Propionate production is restricted to propiogenic species distributed among different microbiota phylum.</i>			
↓ Butyrate <small>(CH₃-CH₂-CH₂-COO⁻)</small>	0 mg/24h	(>80)	
<i>Butyrate production depends on some butyrogenic species distributed among different microbiota phylum.</i>			
↑ Lactate <small>(CH₃-CHOH-CHOH-COO⁻)</small>	251 mg/24h	(0-50)	
<i>Lactate results from rapid fermentation of incompletely digestible carbohydrates by especially bifidobacterium and lactobacillus species. Lactate is healthy promoting only when converted into Butyrate by "cross-feeding" bacterias.</i>			
↑ Isobutyrate	84 mg/24h	(10-40)	
<i>Branched SCFAs issued from BCAA valin microbiota fermentation. Indicator of dietary protein intake.</i>			
Isovalerate	0 mg/24h	(20-70)	
<i>Branched SCFAs issued from BCAA/leu microbiota fermentation. Indicator of dietary protein intake.</i>			
Production of SCFAs	579 mg/24h		
Distribution			Ref. Val.
<i>Reference values are issued, for these three SCFAs, from distribution in gut lumen of western diet fed individuals.</i>			
Acetate	50 %		(50-70)
Propionate	50 %		
Butyrate	0 %		
Propionate/Butyrate ratio	0.98		(<0.40)
<i>This ratio reduces lipogenic, adipogenic and weight gain promotion of Acetate.</i>			
Branched/Linear SCFAs ratio	0.1		
<i>Index of protein part in dietary intake.</i>			

As Butyrate is mainly consumed by gut mucosa, the significance of its absence in plasma associates low fiber intake and low or absence butyrogenic microbiota species, as Ruminococcus bromii, Faecalibacterium prausnitzii, Eubacterium rectale and Eubacterium hallii.

High plasma Lactate level resulting from rapidly fermentable, partially digestible carbohydrates increased consumption associated with reduced "cross-feeding" butyrogenic microbiota bacterias that converts it in Butyrate.

Increased overall production of Short Chain Fatty Acids

High plasma Lactate level resulting from rapidly fermentable, partially digestible carbohydrates increased consumption associated with reduced "cross-feeding" butyrogenic microbiota bacterias that converts it in Butyrate.

Moderately increased SCFA formate associated with mild to moderate gut-inflammation. Gut Inflammation is Histologically characterized by Tight Junction dissociation and immune cells including Lymphocytes, Macrophages, Neutrophils margination and lamina propria.

BIOCHIMIE URINAIRE

Creatinine urine **
(Sarcosine oxidase)

1 022 mg/l
9 mmol/l

(1 200-2 000)
(10-17)

05/01/2018

1 022

SCFAS - LOW PRODUCTION, UNFAVORABLE MICROBIOTA

URINARY SHORT CHAIN FATTY ACIDS

Ion chromatography

BMI 19.4
(Body Mass Index)

↑ Formate 12 mg/24h (<10)
(HCOO⁻)

Formate is issued from methanogenic archebacteriae and is associated with gut inflammation.

↓ Acetate 118 mg/24h (>150)
(CH₃-COO⁻)

Acetate biosynthetic pathway is largely distributed among majority of microbiota species.

↓ Propionate 19 mg/24h (>80)
(CH₃-CH₂-COO⁻)

Propionate production is restricted to propiogenic species distributed among different microbiota phylum.

↓ Butyrate 0 mg/24h (>80)
(CH₃-CH₂-CH₂-COO⁻)

Butyrate production depends on some butyrogenic species distributed among different microbiota phylum.

Lactate 12 mg/24h (0-50)
(CH₃-CHOH-CHOH-COO⁻)

Lactate results from rapid fermentation of incompletely digestible carbohydrates by especially bifidobacterium and lactobacillus species.

Lactate is healthy promoting only when converted into Butyrate by "cross-feeding" bacterias.

↑ Isobutyrate 84 mg/24h (10-40)

Branched SCFAs issued from BCAA valin microbiota fermentation. Indicator of dietary protein intake.

Isovalerate 0 mg/24h (20-70)

Branched SCFAs issued from BCAA/leu microbiota fermentation. Indicator of dietary protein intake.

Production of SCFAs Distribution 137 mg/24h

Ref. Val.

Reference values are issued, for these three SCFAs, from distribution in gut lumen of western diet fed individuals.

Acetate	86 %	(50-70)
Propionate	14 %	
Butyrate	0 %	

Propionate/Butyrate ratio 0.16 (<0.40)

This ratio reduces lipogenic, adipogenic and weight gain promotion of Acetate.

Branched/Linear SCFAs ratio 0.6

Index of protein part in dietary intake.

As Butyrate is mainly consumed by gut mucosa, the significance of its absence in plasma associates low fiber intake and low or absence butyrogenic microbiota species, as Ruminococcus bromii, Faecalibacterium prausnitzii, Eubacterium rectale and Eubacterium hallii.

As Propionate is mainly consumed by liver for inflammation reduction and glucose and lipid homeostasis, the significance of its decreased plasma level associates low fiber intake and reduced propiogenic microbiota species, as for example Akkermansia Muciniphila.

Reduced overall production of Short Chain Fatty Acids

SCFA profile largely dominated by Acetate with minor part of Propionate and therefore reduced Propionate/Acetate ratio, free of Butyrate, displaying mainly lipogenic, adipogenic and weight gain promoting effect.

Propionate enhances energy homeostasis by reducing appetite and tissue lipogenesis, improves plasma gluco-lipid profile and decreases digestive and systemic inflammation.

Butyrate is the gut mucosa nutrient, enhancing its renewal, that is to say, growth and trophicity while protecting it from cancer degeneration : it is named Butyrate paradox. Moreover, Butyrate improves energy and metabolic homeostasis of the body and combats systemic inflammation by many mechanisms. It reduces Macrophages and cytotoxic T Lymphocytes tissue infiltration.