3 Biotech

Diversity and functional properties of acid tolerant bacteria isolated from Tea plantation soil of Assam

Authors: Gunajit Goswami[1, 2], Priyadarshini Deka[1], Pompi Das[1], Sudipta Sankar Bora[1], Ramkrishna Samanta[2], Robin Chandra Boro[1], Madhumita Barooah [1]*

[1]Department of Agricultural Biotechnology, Assam Agricultural University, Jorhat-785013, Assam, India

[2]Department of Life-Sciences, Dibrugarh University, Dibrugarh-786004, Assam, India

***Corresponding author's Email:** m17barooah@yahoo.co.in

Table S1: Biochemical and Carbohydrate utilization (API 50CHB and API20E) profile of the isolates

[a]Tests	ISOLATES														
	API20E														
	G1	. G2	. G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15
Catalase	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ONPG	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ADH	-	+	-	+	-	+	+	-	+	-	+	+	+	+	-
LDC	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-
ODC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Citrate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
H2S	-	+	-	-	+	-	+	+	+	+	+	+	+	+	+
Urease	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TDA	+	+	-	+	-	-	-	+	-	**W**	-	-	-	-	+
Indole	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gelatin	-	+	+	+	+	-	+	+	+	+	+	+	+	+	+
Nitrate	-	+	**W**	**W**	-	**W**	+	-	+	+	+	+	+	+	-
Lechithinase	+	+	-	+	+	+	+	+	+	+	-	+	-	-	+
Protease	+	+	-	+	-	+	-	-	+	+	-	+	-	-	-
Growth at 4 °C	-	+	-	+	-	+	+	+	+	+	-	+	-	-	-
Growth at 42°C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Growth at 50 °C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Growth at 5% NaCl	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
Growth at 7% NaCl	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
Growth at 10% NaCl	+	-	+	+	-	+	-	-	-	-	-	-	-	-	-
API 50CHB															

Glycerol	+	+	+	+	-	+	+	-	+	+	+	+	+	+	-
Erythritol	-	-	-	-	-	+	-	-	-	-	-	-	-	W	-
D-Arabinose	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L-Arabinose	-	-	-	-	+	-	+	-	+	-	+	+	+	+	-
Ribose	-	+	-	-	-	-	+	-	+	+	+	+	+	+	-
D-Xylose	-	-	-	-	+	+	+	-	W	-	+	+	+	-	-
L-Xylose	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Adonitol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-Methyl-D-xyloside	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
Galactose	W	+	+	+	-	+	+	-	+	+	+	+	+	+	-
D-Glucose	+	+	+	+	+	+	+	-	+	+	+	+	+	+	-
D-Fructose	+	+	+	+	-	+	+	-	+	+	+	+	+	+	-
D-Mannose	-	+	-	-	-	+	W	-	-	-	+	+	+	+	-
L-Sorbose	-	-	-	-	-	+	-	-	-	-	+	+	+	-	-
Rhamnose	-	-	-	-	-	W	W	-	-	-	W	W	-	-	-
Dulcitol	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Inositol	-	-	-	-	-	-	+	-	W	+	+	+	+	+	-
Mannitol	+	-	W	+	+	+	+	-	+	-	+	+	+	+	-
Sorbitol	-	-	-	-	-	+	+	-	+	-	-	W	W	-	-
Methyl- α -D-mannopyranoside	-	-	-	-	-	-	W	-	-	-	+	+	+	W	-
Methyl-α-D-glucopyranoside	-	W	-	-	-	-	+	-	+	W	+	+	+	W	-
N-Acetylglucosamine	W	+	W	-	-	-	+	+	W	+	+	+	+	+	+
Amygdalin	-	+	-	-	-	-	+	-	W	W	+	+	+	+	-
Arbutin	-	+	-	-	-	-	+	-	+	+	+	+	+	+	-
Esculin	-	+	-	-	-		+	W	+	+	+	+	+	+	W
Salicin	-	+	-	-	-	-	+	-	+	+	+	+	+	+	-
Cellobiose	-	+	-	-	-	+	+	-	+	+	+	+	+	+	-

Maltose	+	+	+	+	+	+	+	W	+	+	+	+	+	+	W
Lactose	-	W	-	+	-	+	+	-	W	W	+	+	+	-	-
Melibiose	-	-	-	-	-	-	+	-	W	-	W	W	W	-	-
Saccharose	+	+	+	+	-	+	+	-	+	+	+	+	+	+	-
Trehalose	W	+	W	+	-	+	+	W	+	+	+	+	+	+	W
Inulin	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-
Melezitose	W	-	+	-	-	-	+	-	-	-	-	-	-	-	-
D-Raffinose	-	-	-	-	-	-	+	-	W	-	+	+	+	W	-
Amidon	-	+	-	-	-	-	+	+	W	+	-	-	-	-	+
Glycogen	-	+	-	-	+	-	+	-	+	+	-	-	-	-	-
Xylitol	-	-	-	-	-	-	W	-	-	-	-	-	-	-	-
β-Gentiobiose	-	W	-	-	-	-	+	-	+	+	+	+	+	+	-
D-Turanose	-	W	-	+	-	-	+	-	W	W	+	+	+	+	-
D-Lyxose	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D-Tagatose	-	-	-	-	-	+	-	-	-	-	+	+	+	+	-
D-Fucose	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
L-Fucose	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D-Arabitol	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
L-Arabitol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gluconate	-	W	-	-	-	-	-	-	-	+	-	-	-	-	-
2-Ketogluconate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5-Ketogluconate	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-
API 20E															
Tests	**G16**	**G17**	**G18**	**G19**	**G20**	**G21**	**G22**	**G23**	**G24**	**G25**	**G26**	**G27**	**G28**	**G29**	**G30**
Catalase	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ONPG	+	+	+	+	+	-	-	+	-	-	-	+	-	+	+
ADH	-	-	-	-	+	+	+	-	+	+	+	-	+	+	-
LDC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

ODC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Citrate	-	+	+	+	-	+	+	-	+	+	+	+	+	+	-
H2S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Urease	+	-	-	-	-	-	**W**	+	-	-	-	-	**W**	+	+
TDA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indole	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VP	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gelatin	**W**	+	+	+	-	+	+	**W**	+	+	+	+	+	+	**W**
Nitrate	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
Lechithinase	+	+	-	+	-	+	+	+	+	+	+	+	+	+	+
Protease	+	+	+	+	-	+	+	+	+	-	**W**	+	+	+	+
Growth at 4 °C	-	-	-	-	-	-		-	-	-	-	-	-	-	-
Growth at 42°C	+	+	+	+	-	**W**	+	+	**W**	**W**	**W**	**W**	**W**	**W**	+
Growth at 50 °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Growth at 5% NaCl	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Growth at 7% NaCl	+	-	**W**	-	-	-	-	+	-	-	-	-	-	-	+
Growth at 10% NaCl	+	-	-	-	-	-	-	+	-	-	-	-	-	-	+
Tests	**API 50 CHB**														
Glycerol	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
Erythritol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D-Arabinose	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L-Arabinose	-	+	+	+	-	-	-	-	-	-	-	+	-	-	-
Ribose	-	+	+	+	+	+	+	-	+	+	+	+	+	+	-
D-Xylose	-	+	+	W	-	-	-	-	-	-	-	+	-	-	-
L-Xylose	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Adonitol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-Methyl-D-xyloside	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-

Galactose	+	+	+	+	-	-	+	+	-	-	-	+	+	+	+
D-Glucose	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
D-Fructose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
D-Mannose	-	+	-	-	-	+	-	-	+	+	+	+	-	+	-
L-Sorbose	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-
Rhamnose	-	-	W	-	-	-	-	-	-	-	-	-	-	-	-
Dulcitol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inositol	-	+	+	W	-	-	+	-	-	-	-	+	+	-	-
Mannitol	+	+	+	+	-	-	-	+	-	-	-	+	-	-	+
Sorbitol	-	W	+	+	-	-	-	-	-	-	-	W	-	-	-
Methyl- α -D-mannopyranoside	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-
Methyl-α-D-glucopyranoside	-	+	+	+	-	W	W	-	W	W	-	+	W	-	-
N-Acetylglucosamine	-	+	+	W	-	+	+	-	+	+	+	+	+	+	-
Amygdalin	-	+	W	W	-	W	W	-	W	W	W	+	W	+	-
Arbutin	-	+	+	+	-	+	+	-	+	+	+	+	+	+	-
Esculin	-	+	+	+	-	+	+	-	+	+	+	+	+	+	-
Salicin	-	+	+	+	-	+	+	-	+	+	+	+	+	+	-
Cellobiose	-	+	+	+	-	+	+	-	+	+	+	+	+	+	-
Maltose	+	+	W	+	-	+	+	+	+	+	+	+	+	+	+
Lactose	+	+	+	W	-	-	W	+	-	-	-	+	W	W	+
Melibiose	-	W	+	W	-	-	-	-	-	-	-	W	-	-	-
Saccharose	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
Trehalose	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
Inulin	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-
Melezitose	-	-	+	-	-	+	-	-	+	+	+	-	-	-	-
D-Raffinose	-	+	+	W	-	-	-	-	-	-	-	+	-	-	-
Amidon	-	-	+	W	-	+	+	-	+	+	+	-	+	+	-

Glycogen	-	-	+	+	-	+	+	-	+	+	+	-	+	+	-
Xylitol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
β-Gentiobiose	-	+	+	+	-	-	+	-	W	W	W	+	+	W	-
D-Turanose	+	+	+	W	-	W	W	+	W	W	W	+	W	-	+
D-Lyxose	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D-Tagatose	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-
D-Fucose	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L-Fucose	-	-	-	-	-	W	-	-	W	W	W	-	-	-	-
D-Arabitol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L-Arabitol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gluconate	-	-	-	-	-	W	+	-	W	W	W	-	+	W	-
2-Ketogluconate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5-Ketogluconate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tests	**API 20E**														
	G31	**G32**	**G33**	**G34**	**G35**	**G36**	**G37**	**G38**	**G39**	**G40**	**G41**	**G42**	**G43**	**G44**	**G45**
Catalase	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ONPG	+	-	+	+	-	+	-	+	-	-	-	+	-	+	+
ADH	-	+	-	+	-	-	+	-	-	-	-	+	-	-	-
LDC	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
ODC	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
Citrate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
H2S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Urease	-	**W**	-	+	+	-	**W**	-	+	-	+	-	-	-	-
TDA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indole	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

VP	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gelatin	+	+	+	+	-	-	+	+	-	-	-	-	+	+	+
Nitrate	+	+	+	+	+	+	+	-	+	+	+	+	+	-	+
Lechithinase	-	+	+	+	-	-	+	-	-	-	-	-	+	-	+
Protease	-	-	+	-	-	-	+	-	-	-	-	-	+	-	-
Growth at 4 °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Growth at 42°C	-	+	**W**	+	+	-	+	**W**	**W**	-	+	-	**W**	-	**W**
Growth at 50 °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Growth at 5% NaCl	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Growth at 7% NaCl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Growth at 10% NaCl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tests	**API 50CHB**														
Glycerol	+	+	+	+	-	-	+	+	-	-	-	-	+	+	+
Erythritol	-	-	-	-	-	-	-	W	-	-	-	-	-	W	-
D-Arabinose	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L-Arabinose	+	-	+	+	-	+	-	+	-	+	-	+	+	+	+
Ribose	+	+	+	+	+	-	+	+	-	-	-	-	+	+	+
D-Xylose	+	-	W	+	-	+	-	-	-	+	-	+	+	-	W
L-Xylose	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Adonitol	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
B-Methyl-D-xyloside	+	-	+	-	-	-	-	-	-	-	-	-	-	-	+
Galactose	+	+	+	+	-	-	+	+	-	-	-	-	+	+	+
D-Glucose	+	+	+	+	-	+	+	+	-	+	-	+	+	+	+
D-Fructose	+	+	+	+	-	-	+	+	-	-	-	-	+	+	+
D-Mannose	+	-	-	+	-	+	-	+	-	-	-	-	+	+	-
L-Sorbose	-	-	-	-		-	-	-	-	-	-	-	W	-	-
Rhamnose	+	-	-	-	-	+	-	-	-	-	-	+	W	-	-

Dulcitol	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Inositol	+	+	W	+	-	+	+	+	-	-	-	+	+	+	W
Mannitol	+	-	+	+	-	+	-	+	-	+	-	+	+	+	+
Sorbitol	-	-	+	+	-	+	-	-	-	-	-	+	+	-	+
Methyl- α -D-mannopyranoside	-	-	-	M	-	-	-	W	-	-	-	-	-	W	-
Methyl-α-D-glucopyranoside	+	W	+	+	+	+	W	W	-	-	-	-	+	W	+
N-Acetylglucosamine	+	+	W	W	+	-	+	+	+	-	+	-	W	+	W
Amygdalin	+	W	+	+	-	-	W	+	-	-	-	-	+	+	W
Arbutin	+	+	+	+	-	-	+	+	-	-	-	-	+	+	+
Esculin	+	+	+	+	-	-	+	+	W	-	W	-	+	+	+
Salicin	+	+	+	+	-	+	+	+	-	-	-	+	+	+	+
Cellobiose	+	+	+	+	-	+	+	+	-	-	-	+	+	+	+
Maltose	+	+	+	+	-	+	+	+	W	+	W	+	+	+	+
Lactose	+	W	W	+	-	+	W	-	-	-	-	-	+	-	W
Melibiose	+	-	W	+	+	-	-	-	-	-	-	-	+	-	W
Saccharose	+	+	+	+	+	+	+	+	-	-	-	+	+	+	+
Trehalose	+	+	+	+	-	+	+	+	W	-	W	+	+	+	+
Inulin	+	-	+	W	-	-	-	-	-	-	-	-	+	-	+
Melezitose	W	-	-	-	-	+	-	-	-	-	-	+	-	-	-
D-Raffinose	+	-	W	+	-	+	-	W	-	-	-	-	+	W	-
Amidon	+	+	W	+	-	-	+	-	+	-	+	-	+	-	W
Glycogen	+	+	+	+	-	-	+	-	-	+	-	-	+	-	+
Xylitol	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
β-Gentiobiose	+	+	+	+	-	-	+	+	-	-	-	-	+	+	+
D-Turanose	+	W	W	+	-	-	W	+	-	-	-	-	+	+	W
D-Lyxose	-	-	-	-	-	-	-	-	-	-	-	W	-	-	-
D-Tagatose	-	-	-	-	-	-	-	+	-	-	-	-	-	+	-

D-Fucose	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L-Fucose	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
D-Arabitol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
L-Arabitol	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-
Gluconate	+	+	-	-	-	-	+	-	-	-	-	-	W	-	-
2-Ketogluconate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5-Ketogluconate	+	-	-	-	-	+	-	-	-	-	-	-	W	-	-
Tests	**API 20E**														
	G46	**G47**	**G48**	**G49**	**G50**	**G51**	**G52**	**G53**	**G54**	**G55**	**G56**	**G57**	**G58**	**G59**	**G60**
Catalase	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ONPG	+	+	-	+	-	-	+	+	+	+	-	+	+	-	+
ADH	-	-	-	-	-	-	+	-	-	-	-	-	-	+	-
LDC	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-
ODC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Citrate	-	+	+	+	+	+	-	-	+	-	+	+	+	-	+
H2S	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-
Urease	+	-	+	-	+	-	-	-	-	-	+	-	-	+	-
TDA	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-
Indole	-	-	-	-	-	-	-	-	-	+	-	+	+	-	-
MR	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
VP	+	+	+	+	+	+	+	-	+	-	+	+	+	-	+
Gelatin	**W**	-	-	+	-	-	-	**W**	+	-	-	**W**	**W**	-	+
Nitrate	+	+	+	+	+	+	-	+	-	+	+	+	+	+	-
Lechithinase	+	-	-	+	-	-	-	+	-	-	-	+	-	+	-
Protease	+	-	+	+	-	-	-	+	-	-	-	+	-	-	-
Growth at 4 °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Growth at 42°C	+	-	**W**	+	+	-	-	+	-	**W**	+	-	+	+	-

Growth at 50 °C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Growth at 5% NaCl	+	+	+	+	+	+	-	+	+	**W**	+	-	-	+	+
Growth at 7% NaCl	+	-	-	-	-	-	-	+	-	-	-	-	-	+	-
Growth at 10% NaCl	+	-	-	-	-	-	-	+	-	-	-	-	-	+	-
Tests	**API 50CHB**														
Glycerol	+	+	-	+	-	-	-	+	+	-	-	+	+	+	+
Erythritol	-	-	-	-	-	-	-	+	-	-	-	-	-	-	W
D-Arabinose	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
L-Arabinose	-	+	-	+	-	+	-	-	+	+	-	+	W	-	+
Ribose	-	+	-	+	-	-	+	-	+	+	-	+	-	-	+
D-Xylose	-	+	-	+	-	+	-	+	-	-	-	W	-	-	-
L-Xylose	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Adonitol	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
B-Methyl-D-xyloside	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-
Galactose	+	+	-	+	-	-	-	+	+	+	-	+	-	W	+
D-Glucose	+	+	-	+	-	+	-	+	+	+	-	+	+	+	+
D-Fructose	+	+	-	+	-	-	+	+	+	+	-	+	-	+	+
D-Mannose	-	+	-	-	-	-	-	+	+	+	-	-	+	-	+
L-Sorbose	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Rhamnose	-	+	-	-	-	-	-	+	-	+	-	-	W	-	-
Dulcitol	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
Inositol	-	+	-	W	-	-	-	-	+	-	-	W	-	-	+
Mannitol	+	+	-	+	-	+	-	+	+	+	-	+	+	+	+
Sorbitol	-	+	-	+	-	-	-	+	-	-	-	+	-	-	-
Methyl- α -D-mannopyranoside	-	-	-	-	-	-	-	-	+	-	-	-	-	-	W
Methyl-α-D-glucopyranoside	-	+	-	+	-	-	-	-	+	-	-	+	+	-	w
N-Acetylglucosamine	-	+	+	W	+	-	-	-	+	-	+	W	-	+	+

Amygdalin	-	-	-	W	-	-	-	-	+	-	-	W	-	-	+
Arbutin	-	+	-	+	-	-	-	-	+		-	+	-	-	+
Esculin	-	+	W	+	W	-	-		+	W	W	+	-	-	+
Salicin	-	+	-	+	-	-	-	-	+	-	-	+	-	-	+
Cellobiose	-	+	-	+	-	-	-	+	+	-	-	+	+	-	+
Maltose	+	+	W	+	W	+	-	+	+	+	W	+	+	+	+
Lactose	+	+	-	W	-	-	-	+	-	+	-	W	W	-	-
Melibiose	-	+	-	W	-	-	-	-	-	-	-	W	-	-	-
Saccharose	+	+	-	+	-	-	-	+	+	+	-	+	+	+	+
Trehalose	+	+	W	+	W	-	-	+	+	+	W	+	+	W	+
Inulin	-	-	-	+	-	-	-	-	-	-	-	+	-	-	-
Melezitose	-	-	-	-	-	-	-	-	-	-	-	-	-	W	-
D-Raffinose	-	+	-	-	-	-	-	-	+	-	-	-	-	-	W
Amidon	-	-	+	W	+	-	-	-	W	-	+	W	-	-	-
Glycogen	-	-	-	+	-	+	-	-	-	-	-	+	-	-	-
Xylitol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
β-Gentiobiose	-	+	-	+	-	-	-	-	+	-	-	+	-	-	+
D-Turanose	+	-	-	W	-	-	-	-	+	-	-	W	-	-	+
D-Lyxose	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D-Tagatose	-	-	-	-	-	-	-	+	+	-	-	-	-	-	+
D-Fucose	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-
L-Fucose	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
D-Arabitol	-	+	-	-	-	-	-	-	-	+	-	-	-	-	-
L-Arabitol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gluconate	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Ketogluconate	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
5-Ketogluconate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tests	**API 20E**														

	G61	G62	G63	G64	G65	G66	G67	G68	G69	G70
Catalase	+	+	+	+	+	+	+	+	+	+
ONPG	+	+	+	+	+	+	+	+	-	+
ADH	-	-	-	-	-	-	-	-	+	-
LDC	-	-	-	-	-	-	-	-	-	-
ODC	-	-	-	-	-	-	-	-	-	-
Citrate	+	+	+	+	+	+	+	+	-	+
H2S	-	-	-	-	-	-	-	-	-	-
Urease	-	-	-	-	-	-	-	-	-	-
TDA	-	-	-	-	-	-	-	-	-	-
Indole	-	-	-	-	-	-	-	-	-	-
MR	-	-	-	-	-	-	-	-	-	-
VP	+	+	+	+	+	+	+	+	+	+
Gelatin	+	+	+	+	+	+	+	+	+	+
Nitrate	-	-	-	-	-	-	-	-	+	-
Lechithinase	-	-	-	-	-	-	-	-	-	-
Protease	-	-	-	-	-	-	-	-	-	-
Growth at 4 °C	-	-	-	-	-	-	-	-	-	-
Growth at 42°C	-	-	-	-	-	-	-	-	-	-
Growth at 50 °C	-	-	-	-	-	-	-	-	-	-
Growth at 5% NaCl	+	+	+	+	+	+	+	+	-	-
Growth at 7% NaCl	-	-	-	-	-	-	-	-	-	-
Growth at 10% NaCl	-	-	-	-	-	-	-	-	-	-
Tests	**API 50CHB**									
Glycerol	+	+	+	+	+	+	-	-	+	+
Erythritol	-	W	-	-	-	-	-	-	-	-
D-Arabinose	-	-	-	-	-	-	-	-	-	-
L-Arabinose	+	+	+	+	+	+	-	+	W	+
Ribose	+	+	+	+	+	+	-	-	-	+

D-Xylose	-	-	-	-	-	-	-	+	-	+
L-Xylose	-	-	-	-	-	-	-	-	-	-
Adonitol	-	-	-	-	-	-	-	-	-	-
B-Methyl-D-xyloside	-	-	-	-	-	-	-	-	-	-
Galactose	+	+	+	+	+	W	+	-	+	+
D-Glucose	+	+	+	+	+	+	+	+	+	+
D-Fructose	+	+	+	+	+	+	-	-	-	+
D-Mannose	+	+	+	+	+	+	-	-	+	+
L-Sorbose	-	-	-	-	-	-	-	-	-	+
Rhamnose	-	-	-	-	-	+	-	-	-	+
Dulcitol	-	-	-	-	-	-	-	-	-	-
Inositol	-	+	-	-	-	-	-	-	-	-
Mannitol	-	+	-	-	-	-	-	+	+	+
Sorbitol	-	-	-	-	-	-	-	-	-	+
Methyl- α -D-mannopyranoside	W	W	W	W	W	W	-	-	-	-
Methyl-α-D-glucopyranoside	-	+	-	-	-	-	-	-	+	W
N-Acetylglucosamine	W	+	W	W	W	W	-	-	-	-
Amygdalin	+	+	+	+	+	+	-	-	-	+
Arbutin	+	+	+	+	+	+	-	-	-	+
Esculin	+	+	+	+	+	+	+	-	-	+
Salicin	+	+	+	+	+	+	-	-	-	+
Cellobiose	+	+	+	+	+	+	+	-	-	+
Maltose	-	+	-	-	-	-	+	+	-	+
Lactose	-	-	-	-	-	-	-	-	-	W
Melibiose	-	-	-	-	-	-	-	-	-	-
Saccharose	+	+	+	+	+	+	-	-	-	+
Trehalose	+	+	+	+	+	+	-	-	+	+

Inulin	-	-	-	-	-	-	-	-	-	+
Melezitose	-	-	-	-	-	-	-	-	-	-
D-Raffinose	-	W	-	-	-	-	-	-	-	+
Amidon	-	-	-	-	-	-	-	-	-	-
Glycogen	-	-	-	-	-	-	-	+	-	-
Xylitol	-	-	-	-	-	-	-	-	-	-
β-Gentiobiose	+	+	+	+	+	+	-	-	-	+
D-Turanose	-	+	-	-	-	-	-	-	-	W
D-Lyxose	-	-	-	-	-	-	-	-	-	-
D-Tagatose	+	+	+	+	+	+	-	-	-	+
D-Fucose	-	-	-	-	-	-	-	-	-	-
L-Fucose	-	-	-	-	-	-	-	-	-	-
D-Arabitol	-	-	-	-	-	-	-	-	-	-
L-Arabitol	-	-	-	-	-	-	-	-	-	-
Gluconate	-	-	-	-	-	-	-	-	-	-
2-Ketogluconate	-	-	-	-	-	-	-	-	-	-
5-Ketogluconate	-	-	-	-	-	-	-	-	-	-

[a] **"+" indicates positive for the test**

"-"indicates negative for test

"W"- indicates weakly positive

Table S2: Representation of the 16S identification and FAME profile (major fatty acids) of the isolates

Isolate code	16S identification	Identity (%)	Accession No.	[a]Major fatty acids (%) (≥ 1%)	Identified as	similarity index
G1	*Staphylococcus hominis*	99	KX343960	14:0 iso (1.55), 15:0 iso (8.57), 15:0 anteiso (45.97), 16:0 (1.32), 17:0 iso (7.38), 17:0 anteiso (13.8), 18:0 (4.26), 18:0 iso (1.57), 19:0 iso (4.13), 19:0 anteiso (5.19), 20:00 (1.17)	*Staphylococcus hominis-hominis*	0.507
G2	*Bacillus sp.*	92	KX343961	13:0 iso (5.67), 13:0 anteiso (2.05), 14:0 iso (4.88), 15:0 iso (17.63), 15:0 anteiso (7.83), 16:1 w7c alcohol (1.24), 16:0 (8.54), 17:1 iso w10c (2.91), 17:1 iso w5c (3.54), 17:1 anteiso A (1.4)	*Bacillus cereus*-GC subgroup B	0.572
G3	*Staphylococcus sp.*	99	KX343962	14:0 iso (13.4), 15:0 iso (7.74), 15:0 anteiso (55.77), 16:0 (1.82), 16:0 iso (1.64), 17:0 iso (5.28), 17:0 anteiso (13.16), 18:0 (3.02)	*Staphylococcus cohnii-cohnii*	0.601
G4	*Staphylococcus saprophyticus*	100	KX343963	14:0(1.10), 14:0 iso (1.88), 15:0 iso (21.9), 15:0 anteiso (41.9), 16:0 (3.57), 16:0 iso (1.94), 17:0 iso (6.56), 17:0 anteiso(18.43), 18:0(5.57), 20:0 (9.24)	*Staphylococcus saprophyticus*	0.528
G5	*Alcaligenes faecalis*	100	KX343964	12:0(3.22), 12:0 2OH (2.24), 14:0(1.09), 14:0 3OH (8.2), 16:0 (36.1), 17:00 (9.48), 17:0 cyclo (1.04), 18:01 (1.1), 19:0 cyclo w8c (8.44), 20:00 (29.35)	*Alkaligens - faecalis*	0.516
G6	*Staphylococcus sp.*	99	KX343965	13:0 iso (1.22), 14:0 (1.76), 14:0 iso (1.1), 15:0(13.85), 15:0 iso (59.14), 16:0(16.19), 16:0 iso (0.28), 17:0 iso (5.94), 17:0 cyclo (2.69)	*Staphylococcus lentus*	0.486
G7	*Bacillus sp.*	100	KX343966	14:0 iso (1.76), 15:0 iso (36.52), 15:0 anteiso (39.82), 16:1 w7c alcohol (2.32), 16:1 w11c (1.41), 16:0 iso (2.4), 17:1 iso w10c (3.89), 17:0 iso (2.85), 17:0 anteiso (2.88), Sum In Feature 4 (17:1 iso I/anteiso B) (1.97)	*Bacillus-megaterium-GC subgroup A*	0.602
G8	*Lysinibacillus sp.*	95	KX343967	14:0 iso (3.62), 15:0 iso (42.08), 15:0 anteiso (9.72), 16:1 w7c alcohol (13.1), 16:1 w11c (2.98), 16:0 iso (12.45), 17:1 iso w10c (1.2), 17:0 iso (3.28), 17:0 anteiso (2.98), Sum In Feature 4(17:1 iso I/anteiso B) (1.61)	*Lysinibacillus sphaericus*-GC subgroup E	0.642
G9	*Bacillus subtilis*	100	KX343968	14:0 iso (1.36), 15:0 iso (39.29), 15:0 anteiso (31.63), 16:1 w7c alcohol (1.36), 16:1 w11c (1.37), 16:0(2.56), 16:0 iso (2.69), 17:1 iso w10c (3.5), 17:0 iso (5.69), 17:0 anteiso (5.3)	*Bacillus subtilis*	0.534
G10	*Bacillus cereus*	99	KX343969	12:0(1.07), 13:0 iso (5.3), 13:0 anteiso (1.78), 14:0(3.11), 14:0 iso (5.86), 15:0 iso (19.58), 15:0 anteiso (6.99), 16:1 w7c alcohol (1.03), 16:0(8.97), 16:0 iso (13.11), 16:1 iso I (2.83), 17:1 iso w10c (1.91), 17:1 iso w5c (2.36), 17:1 anteiso A (1.28), 17:0 iso (9.17), 17:0 anteiso (3.67), Sum In Feature 3 (16:1 w7c/16:1 w6c) (7.02)	*Bacillus cereus GC subgroup B*	0.566
G11	*Bacillus invictae*	99	KX343970	14:0 iso (1.06), 15:0 iso (43.61), 15:0 anteiso (24.44), 16:0(2.48), 16:0 iso (3.96), 17:1 iso w10c (2.1), 17:0 iso (11.43), 17:0 anteiso (7.24)	*Bacillus pumilus*	0.585
12	*Bacillus sp.*	100	KX343971	13:0 iso (6.48), 13:0 anteiso (1.02), 14:0(2.86), 14:0 iso (3.5), 15:0 iso (31.14), 15:0 anteiso (5.38), 16:0(5.21), 16:0 iso (7.42), 17:1 iso w10c (1.75), 17:1 iso w5c (4.92), 17:1 anteiso A (1.44), 17:0 iso (10.98),17:0 anteiso (2.44), Sum In Feature 3 (16:1 w7c/16:1 w6c) (8.54)	*Bacillus-cereus-GC subgroup B*	0.628

G13	*Bacillus sp.*	100	KX343972	14:0 iso (1.83), 15:0 iso (48.89), 15:0 anteiso (29.66), 16:0(1.47), 16:0 iso (2.63), 17:1 iso w10c (1.49), 17:0 iso (5.24), 17:0 anteiso (5.66), Sum In Feature 4(17:1 iso I/anteiso B) (1.78)	*Bacillus pumilus*	0.513
G14	*Bacillus pumilus*	100	KX343973	14:0(1.07), 15:0 iso (43.63), 15:0 anteiso (24.44), 16:0(2.47), 16:0 iso (3.95), 17:1 iso w10c (2.07), 17:0 iso (11.37), 17:0 anteiso (7.19)	*Bacillus pumilus*	0.611
G15	*Lysinibacillus fusiformis*	100	KX343974	14:0(3.35), 15:0 iso (41.68), 15:0 anteiso (10.41), 16:1 w7c alcohol (13.34), 16:1 w11c (2.09), 16:0 iso (14.21), 17:1 iso w10c (1.23), 17:0 iso (3.47), 17:0 anteiso (2.68), Sum In Feature 4(17:1 iso I/anteiso B) (1.54)	*Lysinibacillus fusiformis*	0.696
G16	*Staphylococcus sp.*	99	KX343975	14:0(1.10), 14:0 iso (1.88), 15:0 iso (21.9), 15:0 anteiso (41.9), 16:0(3.57), 16:0 iso (1.94), 17:0 iso (6.56), 17:0 anteiso (18.19), 18:0(5.57), 20:00 (9.24)	*Staphylococcus saprophyticus*	0.621
G17	*Bacillus sp.*	99	KX343976	13:0 iso (6.48), 13:0 anteiso (1.02), 14:0(2.86), 14:0 iso (3.5), 15:0 iso (31.14), 15:0 anteiso (5.38), 16:0(5.21), 16:0 iso (7.42), 17:1 iso w10c (1.75), 17:1 iso w5c (4.92), 17:1 anteiso A (1.44), 17:0 iso (10.98), 17:0 anteiso (2.44), Sum In Feature 3 (16:1 w7c/16:1 w6c) (8.54)	*Bacillus-cereus-GC subgroup B*	0.586
G18	*Bacillus megaterium*	100	KX343977	15:0 iso (38.3), 15:0 anteiso (38.93), 16:1 w7c alcohol (1.56), 16:1 w11c (1.44), 16:0 iso (1.12), 17:1 iso w10c (3.98), 17:1 anteiso (1.76), 17:0 iso (2.63), 17:0 anteiso (2.74)	*Bacillus-megaterium-GC subgroup A*	0.643
G19	*Bacillus subtilis*	99	KX343978	14:0 iso (1.25), 15:0 iso (15.44), 15:0 anteiso (39.98), 16:0(4.37), 16:0 iso (4.9), 17:1 iso w10c (1.06), 17:0 iso (13.19), 17:0 anteiso (14.62)	*Bacillus-subtilis*	0.513
G20	*Brevundimonas diminuta*	93	KX343979	12:0 3OH (2.38), 14:0(1.29), 16:0(26.01), 17:1 w8c (1.58), 18:0(1.66), 19:0 cyclo w8c (2.37), Sum In Feature 3 (16:1 w7c/16:1 w6c) (2.45), Sum In Feature 8 (18:1 w7c) (57.52)	*Brevundimonas-diminuta*	0.607
G21	*Bacillus sp.*	100	KX343980	13:0 iso (5.67), 13:0 anteiso (2.05), 14:0 iso (4.88), 15:0 iso (17.63), 15:0 anteiso (7.83), 16:0(8.54), 17:1 iso w10c (2.91), 17:1 iso w5c (3.54), 17:1 anteiso A (1.4), 17:0 iso (10.35), 17:0 anteiso (4.07), 18:0 (2.03), Sum In Feature 2 (14:0 3OH/16:1 iso I) (2.26), Sum In Feature 3 (16:1 w7c/16:1 w6c) (7.92)	*Bacillus thuringiensis*	0.621
G22	*Bacillus cereus*	99	KX343981	13:0 iso (6.48), 13:0 anteiso (1.02), 14:0(2.86), 14:0 iso (3.5), 15:0 iso (31.14), 15:0 anteiso (5.38), 16:0(5.21), 16:0 iso (7.42), 17:1 iso w10c (1.75), 17:1 iso w5c (4.92), 17:1 anteiso A (1.44), 17:0 iso (10.98), 17:0 anteiso (2.44), Sum In Feature 3 (16:1 w7c/16:1 w6c) (8.54)	*Bacillus-cereus-GC subgroup B*	0.605
G23	*Staphylococcus saprophyticus*	100	KX343982	14:0(1.10), 14:0 iso (1.88), 15:0 iso (21.9), 15:0 anteiso (41.9), 16:0(3.57), 16:0 iso (1.94), 17:0 iso (6.56), 17:0 anteiso (18.43), 18:0(5.57), 20:00 (9.24)	*Staphylococcus-cohnii-cohnii*	0.601
G24	*Bacillus thuringiensis*	99	KX343983	13:0 iso (10.52), 13:0 anteiso (1.45), 14:0(4.02), 14:0 iso (5.04), 15:0 iso (32.04), 15:0 anteiso (5.79), 16:0(3.77), 16:0 iso (5.48), 17:1 iso w10c (1.5), 17:1 iso w5c (4.21), 17:1 anteiso A (1), 17:0 iso (6.21), 17:0 anteiso (1.31), Sum In Feature 2 (14:0 3OH/16:1 iso I) (3.35), Sum In Feature 3 (16:1 w7c/16:1 w6c) (9.33)	*Bacillus thuringiensis*	0.723

G25	*Bacillus sp.*	100	KX343984	13:0 iso (12.23), 13:0 anteiso (1.52), 14:0(4.15), 14:0 iso (4.84), 15:0 iso (36.44), 15:0 anteiso (4.99), 16:0(3.67), 16:0 iso (5.28), 17:1 iso w10c (1.5), 17:1 iso w5c (4.26), 17:0 iso (5.98), 17:0 anteiso (1.03), Sum In Feature 2 (14:0 3OH/16:1 iso I) (3.85), Sum In Feature 3 (16:1 w7c/16:1 w6c) (7.59)	*Bacillus-thuringiensis*	0.611
G26	*Bacillus sp.*	100	KX343985	13:0 iso (12.23), 13:0 anteiso (1.52), 14:0(4.15), 14:0 iso (4.84), 15:0 iso (34.94), 15:0 anteiso (5.09), 16:0(3.67), 16:0 iso (6.24), 17:1 iso w10c (1.5), 17:1 iso w5c (4.26), 17:0 iso (5.21), 17:0 anteiso (1.03)	*Bacillus-thuringiensis*	0.634
G27	*Bacillus sp.*	100	KX343986	13:0 iso (6.48), 13:0 anteiso (1.02), 14:0(2.86), 14:0 iso (3.5), 15:0 iso (31.14), 15:0 anteiso (5.38), 16:00(5.21), 16:0 iso (7.42), 17:1 iso w10c (1.75), 17:1 iso w5c (4.92), 17:1 anteiso A (1.44), 17:0 iso(10.98), 17:0 anteiso (2.44), Sum In Feature 3 (16:1 w7c/16:1 w6c) (8.54)	*Bacillus-cereus-GC subgroup B*	0.589
G28	*Bacillus cereus*	98	KX343987	13:0 iso (7.05), 13:0 anteiso (1.04), 14:0(3.8), 14:0 iso (3.84), 15:0 iso (33.93), 15:0 anteiso (4.83), 16:0(4.66), 16:0 iso (5.46), 17:1 iso w10c (2.47), 17:1 iso w5c (4.98), 17:0 iso (8.43), 17:0 anteiso (1.51), Sum In Feature 2 (14:0 3OH/16:1 iso I) (2.55), Sum In Feature 3 (16:1 w7c/16:1 w6c) (9.19)	*Bacillus-cereus-GC subgroup A*	0.741
G29	*Bacillus sp.*	99	KX343988	13:0 iso (5.67), 13:0 anteiso (2.05), 14:0 iso (4.88), 15:0 iso (17.63), 15:0 anteiso (7.83), 16:1 w7c alcohol (1.24), 16:0(8.54), 17:1 iso w10c (2.91), 17:1 iso w5c (3.54), 17:1 anteiso A (1.4), 17:0 iso (10.35), 17:0 anteiso (4.07), 18:0(2.03), Sum In Feature 2 (14:0 3OH/16:1 iso I) (2.26), Sum In, Feature 3 (16:1 w7c/16:1 w6c) (7.92)	*Bacillus-cereus-GC subgroup A*	0.648
G30	*Staphylococcus sp.*	99	KX343989	14:0(1.10), 14:0 iso (1.88), 15:0 iso (21.9), 15:0 anteiso (41.9), 16:0(3.57), 16:0 iso (1.94), 17:0 iso (6.56), 17:0 anteiso (18.43), 18:0(5.57), 20:00 (9.24)	*Staphylococcus saprophyticus*	0.421
G31	*Bacillus sp.*	96	KX343990	14:0(1.3), 14:0 iso (2.67), 15:0isoG (0.03), 15:0 iso (11.22), 15:0 anteiso (71.72), 16:0(1.34), 16:0 iso(5.88), 17:1 anteiso (3.59)	*Brevibacillus-choshinensis*	0.671
G32	*Bacillus cereus*	99	KX343991	13:00 (7.11), 13:0 iso (1.14), 14:0(3.9), 14:0 iso (4.9), 15:0(28.23), 15:0 iso (5.52), 16:1 w7c alcohol (1.31), 16:0(4.97), 16:0 iso (7.15), 16:1 iso I (2.99), 17:1 iso w10c (3.84), 17:1 iso w5c (4.71), 17:0 iso (8.16), 17:0 anteiso (1.6), Sum In Feature 3 (16:1 w7c/16:1 w6c) (9.11)	*Bacillus-cereus-GC subgroup A*	0.741
G33	*Bacillus subtilis*	100	KX343992	15:0 iso (27.5), 15:0 anteiso (43.83), 15:1 w5c (1.96), 16:1 w11c (1.49), 16:0(2.45), 16:0 iso (2.85), 17:1 iso w10c (3.38), 17:0 iso (4.45), 17:0 anteiso (6.52), Sum In Feature 4(17:1 iso I/anteiso B) (2.52)	*Bacillus-subtilis*	0.529
G34	*Bacillus sp.*	99	KX343993	14:0 iso (1.35), 15:0 iso (37.92), 15:0 anteiso (32.91), 16:0(1.77), 16:0 iso (4.85), 17:0 iso (9.75), 17:0 anteiso (8.28)	*Bacillus-licheniformis*	0.534
G35	*Bacillus sp.*	99	KX343994	14:0 (3.35), 15:0 iso (41.68), 15:0 anteiso (10.41). 16:1 w7c alcohol (13.34), 16:1 w11c (2.09) 16:0 iso (14.21), 17:1 iso w10c (1.23), 17:0 iso (3.47), 17:0 anteiso (2.68), Sum In Feature 4(17:1 iso I/anteiso B) (1.54)	*Lysinibacillus-sphaericus-GC subgroup E*	0.527
G36	*Enterobacter sp.*	99	KX343995	12:0 (1.76), 13:00 (2.08), 14:0(8.58), 14:0 3OH (8.14), 16:0(21.99), 17:00 (5.35), 17:0 cyclo (18.16), 19:0 cyclo w8c (3.33), Sum in feature 1 (13:0 3OH/15:1 iso H) (2.71), Sum In Feature 3 (16:1 w7c/16:1 w6c) (7.96), Sum In Feature 8 (18:1 w7c) (13.55)	*Enterobacter-hormaechei*	0.545

G37	*Bacillus cereus*	99	KX343996	13:0 iso (7.11), 13:0 anteiso (1.14), 14:0(3.9), 14:0 iso (4.9), 15:0 iso (30.23), 15:0 anteiso (5.52), 16:1 w11c (0.49), 16:0(4.97), 16:0 iso (7.15), 16:1 iso I (2.99), 17:1 iso w10c (3.84), 17:1 iso w5c (4.71), 17:0 iso (8.16), 17:0 anteiso (1.6), Sum In Feature 3 (16:1 w7c/16:1 w6c) (9.11)	*Bacillus-cereus-GC subgroup A*	0.621
G38	*Bacillus sp.*	100	KX344029	14:0 iso (1.22), 15:0 iso (50.47), 15:0 anteiso (23.92), 16:0(2.54), 16:0 iso (3.5), 17:1 iso w10c (1.4), 17:0 iso (7.11), 17:0 anteiso (6.85)	*Bacillus-pumilus-*	0.772
G39	*Lysinibacillus sphaericus*	100	KX344027	14:0 iso (3.35), 15:0 iso (41.68), 15:0 anteiso (10.41), 16:1 w7c alcohol (13.34), 16:1 w11c (2.09), 16:0 iso (14.21), 17:1 iso w10c (1.23), 17:1 anteiso (1.54), 17:0 iso (3.47), 17:0 anteiso (2.68)	*Lysinibacillus-sphaericus-GC subgroup E*	0.696
G40	*Alcaligenes sp.*	99	KX344028	12:0 (3.22), 12:0 2OH (2.24), 14:0(1.09), 14:0 3OH (8.2), 16:0(36.1), 17:00 (10.24), 17:0 cyclo (1.06), 18:01 (1.1), 19:0 cyclo w8c (8.44), 20:0 (29.35)	*Alcaligenes faecalis*	0.526
G41	*Lysinibacillus sp.*	98	KX343997	14:0 iso (3.73), 15:0 iso (42.54), 15:0 anteiso (10.01), 16:1 w7c alcohol (14.12), 16:1 w11c (2.09), 16:0 iso (14.21), 17:1 iso w10c (1.23), 17:1 anteiso (1.54), 17:0 iso (3.47), 17:0 anteiso (2.68)	*Lysinibacillus-sphaericus-GC subgroup E*	0.524
G42	*Enterobacter sp.*	99	KX343998	12:0 (1.76), 13:00 (2.08), 14:0(10.11), 14:0 3OH (8.14), 16:0(21.99), 17:00 (5.35), 17:0 cyclo (18.16) 19:0 cyclo w8c (3.33), Sum in feature 1 (13:0 3OH/15:1 iso H) (3.08), Sum In Feature 3 (16:1 w7c/16:1 w6c) (7.96), Sum In Feature 8 (18:1 w7c) (13.55)	*Enterobacter-hormaechei*	0.545
G43	*Bacillus sp.*	98	KX343999	14:0 iso (1.63), 15:0 iso (33.58), 15:0 anteiso (39.11), 16:1 w7c alcohol (2.55), 16:1 w11c (1.27), 16:0(1.42), 16:0 iso (3.09), 17:1 iso w10c (2.73), 17:0 iso (3.06), 17:0 anteiso (6.34), Sum In Feature 4(17:1 iso I/anteiso B) (2.66)	*Bacillus subtilis*	0.621
G44	*Bacillus pumilus*	100	KX344000	14:0 iso (1.07), 15:0 iso (43.24), 15:0 anteiso (24.23), 16:0(2.46), 16:0 iso (3.91), 17:1 iso w10c (2.05), 17:0 iso (11.24), 17:0 anteiso (7.11)	*Bacillus pumilus*	0.656
G45	*Bacillus subtilis*	99	KX344001	14:0(1.3), 14:0 iso (3.56), 15:0 iso (32.1), 15:0 anteiso (37.64), 16:1 w7c alcohol (1.06), 16:1 w11c (2.57), 16:0(3.27), 16:0 iso (2.12), 17:0 iso (4.07), 17:0 anteiso (5.52), 18:0 (1.01), Sum In Feature 4(17:1 iso I/anteiso B) (1.17)	*Bacillus subtilis*	0.659
G46	*Staphylococcus saprophyticus*	100	KX344002	14:0 (1.12), 14:0 iso (1.37), 15:0 iso (27.9), 15:0 anteiso (37.9), 16:0(3.57),16:0 iso (1.94), 17:0 iso (6.56), 17:0 anteiso (17.69), 18:0 (5.57), 19:0 iso (0:14), 20:0 (9.24)	*Staphylococcus saprophyticus*	0.619
G47	*Klebsiella pneumoniae*	99	KX344003	12:0 (2.18), 14:0(10.58), 14:0 3OH (9.29), 16:0 (24.59), 17:00 (1.97), 17:0 cyclo (12.45), 19:0 cyclo w8c (1.15), Sum In Feature 3 (16:1 w7c/16:1 w6c) (12.32), Sum In Feature 8 (18:1 w7c) (22.31)	*Klebsiella-pneumoniae-pneumoniae-GC subgroup B*	0.679
G48	*Bacillus sp.*	100	KX344004	14:0 iso (3.35), 15:0 iso (41.68), 15:0 anteiso (10.41), 16:1 w7c alcohol (13.34), 16:1 w11c (1.89), 16:0 iso (14.21), 17:1 iso w10c (1.23), 17:1 anteiso (1.54), 17:0 iso (3.47), 17:0 anteiso (2.68)	*Lysinibacillus-sphaericus-GC subgroup E*	0.436
G49	*Bacillus subtilis*	99	KX344005	15:0 iso (27.5), 15:0 anteiso (44.01), 15:1 w5c (2.06), 16:1 w11c (1.59), 16:0 (2.45), 16:0 iso (2.85) 17:1 iso w10c (2.38), 17:0 iso (4.45), 17:0 anteiso (8.52), Sum In Feature 4(17:1 iso I/anteiso B) (2.52)	*Bacillus subtilis*	0.568

G50	*Lysinibacillus sp.*	100	KX344006	14:0(3.35), 15:0 iso (41.68), 15:0 anteiso (10.41), 16:1 w7c alcohol (13.34), 16:1 w11c (2.09), 16:0 iso (14.21), 17:1 iso w10c (1.23), 17:0 iso (3.47), 17:0 anteiso (2.68), 18:01 (1.54)	*Lysinibacillus-sphaericus-GC subgroup E*	0.556
G51	*Alcaligenes sp.*	100	KX344007	12:0(3.22), 12:0 2OH (2.24), 14:0 (1.09), 14:0 3OH (8.2), 16:0 (36.1), 17:0 (9.48), 17:0 cyclo (1.04), 18:1 (1.1), 20:00 (9.69), Sum In Feature 2 (14:0 3OH/16:1 iso I) (29.35)	*Alcaligenes faecalis*	0.329
G52	*Brevundimonas sp.*	100	KX344008	12:0 3OH (2.26), 14:0(1.01), 16:0(25.37), 18:01 (61.13), Sum In Feature 2 (14:0 3OH/16:1 iso I) (1.87), Sum In Feature7 (5.21)	*Brevundimonas-diminuta*	0.545
G53	*Staphylococcus sciuri*	100	KX344009	13:0 iso (1.22), 14:0 iso (1.22), 15:0(49.47), 15:0 iso (23.92), 16:0(2.68),16:0 iso (3.5), 17:1 iso w10c (1.4), 17:1 w8c (7.91), 17:0 iso (3.85)	*Staphylococcus sciuri*	0.572
G54	*Bacillus safensis*	98	KX344010	12:0 antiiso (1.16), 14:0 (1.03), 14:0 iso (1.66), 15:0(11.65), 15:0 iso (34.57), 16:1 w11c (1.03), 16:0(8), 16:0 iso (4.91), 17:1 w8c (10.52), 17:0 iso (13.78), 17:0 cyclo (1.8)	*Bacillus-subtilis*	0.235
G55	*Escherichia coli*	100	KX344011	12:0(2.18), 13:0 (0.51), 14:0(10.58), 16:0(24.59), 16:0 iso (0.03), 17:0 anteiso (1.97), 17:00 (12.45) 18:01 (22.31), 19:0 anteiso (1.15), 20:00 (9.29), Sum In Feature 2 (14:0 3OH/16:1 iso I) (12.32)	*Escherichia-fergusonii-GC subgroup A*	0.628
G56	*Lysinibacillus sp.*	100	KX344012	14:0(3.35), 15:0 iso (41.68), 15:0 anteiso (10.41), 16:1 w7c alcohol (13.34), 16:1 w11c (2.09), 16:0 iso (14.21)	*Lysinibacillus fusiformis*	0.671
G57	*Bacillus subtilis*	100	KX344013	15:0(27.5), 15:0 iso (43.83), 15:1 w5c (1.96), 16:1 w11c (1.49), 16:0 (2.45), 16:0 iso (2.85), 17:1 iso w10c (3.38), 17:1 w8c (4.45), 17:0 iso (6.52), Sum In Feature 3 (16:1 w7c/16:1 w6c) (2.52)	*Bacillus subtilis*	0.715
G58	*Aeromonas sobria*	100	KX344014	12:0 (5.1), 13:0 iso (2.4), 14:0 (2.8), 15:0isoG (1.7), 15:0(4.5), 15:0 anteiso (5.2), 16:1 w7c alcohol (1.7), 16:0 (10.5), 16:0 iso (2.7),17:1 anteiso B (2.2), 17:1 w8c (7.6), 17:0 anteiso (1.1), 18:01 (10.2), 20:0 (5.4),Iso 17:1 w9c (5.5), Sum In Feature 2 (14:0 3OH/16:1 iso I) (24)	*Aeromonas sobria*	0.529
G59	*Staphylococcus sp.*	100	KX344015	14:0 iso (1.55), 15:0 (8.57), 15:0 iso (45.97), 16:0(1.32),17:1 w8c (7.38), 17:0 iso (13.8), 17:00 (4.26),18:0 (1.57),19:0 iso (5.19), 19:0 cyclo w8c (1.17), Sum In Feature 8 (18:1 w7c) (4.13)	*Staphylococcus-hominis-hominis*	0.507
G60	*Bacillus pumilus*	100	KX344016	8:0 3OH (1.03), 14:0 iso (1.07), 15:0 (43.24), 15:0 iso (24.23), 16:1 w7c alcohol (0.61), 16:0 (2.46), 16:0 iso (3.91), 17:1 iso w10c (2.05), 17:1 w8c (11.24), 17:0 iso (7.11)	*Bacillus pumilus*	0.528
G61	*Bacillus invictae*	100	KX344017	14:0 iso (1.12), 15:0 iso (41.61), 15:0 anteiso (24.04), 16:0 (2.48), 16:0 iso (3.27), 17:1 iso w10c (2.1), 17:1 w8c (12.46), 17:0 iso (7.24)	*Bacillus-pumilus-GC subgroup B*	0.585
G62	*Bacillus invictae*	100	KX344018	14:0 iso (1.26), 15:0 iso (43.61), 15:0 anteiso (24.14), 16:0(2.48), 16:0 iso (3.57), 17:1 iso w10c (1.99), 17:1 w8c (12.01), 17:0 iso (7.24)	*Bacillus-pumilus-GC subgroup B*	0.428
G63	*Bacillus invictae*	100	KX344019	14:0 iso (1.16), 15:0 iso (42.21), 15:0 anteiso (27.14), 16:0 (2.48), 16:0 iso (2.98), 17:1 iso w10c (2.13), 17:1 w8c (12.88), 17:0 iso (7.24)	*Bacillus-pumilus-GC subgroup B*	514
G64	*Bacillus invictae*	100	KX344020	14:0 iso (1.11), 15:0 iso (43.28), 15:0 anteiso (22.44), 16:0(2.48), 16:0 iso (4.01), 17:1 iso w10c (2.34), 17:1 w8c (12.56), 17:0 iso (7.24)	*Bacillus-pumilus-GC subgroup B*	0.527

G65	*Bacillus invictae*	99	KX344021	14:0 iso (1.05), 15:0 iso (44.02), 15:0 anteiso (20.89), 16:0(2.48), 16:0 iso (4.12), 17:1 iso w10c (2.22), 17:1 w8c (12.23), 17:0 iso (7.24)	*Bacillus-pumilus-GC subgroup B*	0.488
G66	*Bacillus altitudinis*	100	KX344022	14:0 iso (1.06), 15:0 iso (43.24), 15:0 anteiso (23.84), 16:0 (2.48), 16:0 iso (3.76), 17:1 iso w10c (2.16), 17:1 w8c (10.87), 17:0 iso (7.24)	*Bacillus-pumilus-GC subgroup B*	0.598
G67	*Brevundimonas sp.*	100	KX344023	12:0 3OH (2.38), 14:0 (1.29), 15:1 w5c (1.98), 16:0 (26.01), 17:1 anteiso B (1.58), 17:0 cyclo (1.66) 18:01 (55.52), 19:0 anteiso (2.37), Sum In Feature 2 (14:0 3OH/16:1 iso I) (2.45)	*Brevundimonas-vesicularis*	0.594
G68	*Alcaligenes faecalis*	100	KX344024	12:0 (3.22), 12:0 2OH (2.24), 14:0 (1.09), 14:0 3OH (8.2), 16:0 (36.1), 17:00 (9.48), 17:0 cyclo (1.04) 18:01 (1.1), 20:0 (8.44), Sum In Feature 2 (14:0 3OH/16:1 iso I) 29.35)	*Alcaligenes faecalis*	0.518
G69	*Aeromonas popoffii*	99	KX344025	12:0 (5.1),13:0 iso (2.4), 14:0(2.8), 15:0isoG (1.7), 15:0 (4.5), 15:0 anteiso (5.2),16:1 w7c alcohol (1.7), 16:0(10.5), 16:0 iso (2.7), 17:1 anteiso (2.2), 17:1 w8c (7.6), 17:0 anteiso (1.1), 18:01 (10.2), 20:00 (5.4), Iso 17:1 w9c (6.29), Sum In Feature 2 (14:0 3OH/16:1 iso I) (24)	*Aeromonas popoffii*	0.621
G70	*Bacillus aerophilus*	100	KX344026	14:0 iso (1.07), 15:0(43.77), 15:0 iso (24.51), 16:0(2.47), 16:0 iso (3.96), 17:1 iso w10c (2.07), 17:1 w8c (11.36), 17:0 iso (7.19)	*Bacillus-pumilus-GC subgroup B*	0.593

[a]Number inside the parenthesis indicates the amount of FAME in percentage

Table 3: PLFA analysis of the soil samples (BACTYPE)

[a]Peak Name	Sample Code														
	S1	**S2**	**S3**	**S4**	**S5**	**S6**	**S7**	**S8**	**S9**	**S10**	**S11**	**S12**	**S13**	**S14**	**control**
AM Fungi	ND	ND	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12
Gram Negative	**2.85**	**4.57**	**6.89**	**5.72**	**3.49**	**5.23**	**4.48**	**1.71**	**1.89**	**4.17**	**8.71**	**10.91**	**7.87**	**0.09**	**10.70**
Methanotroph	0.23	ND	ND	0.36	0.81	ND	ND	ND	ND	0.70	ND	ND	0.16	8.30	ND
Eukaryote	89.26	83.51	77.48	67.98	76.00	70.35	30.00	0.20	0.16	0.99	83.46	77.31	82.88	82.81	80.40
Fungi	0.35	0.64	1.14	0.45	0.61	ND	ND	0.94	0.40	ND	0.22	1.21	0.95	0.71	ND
Gram Positive	**4.31**	**6.31**	**7.92**	**13.32**	**11.67**	**19.09**	**54.88**	**91.76**	**91.49**	**84.39**	**2.97**	**5.24**	**2.94**	**3.14**	**3.50**
Anaerobe	2.83	4.64	5.62	6.38	2.19	5.33	5.20	1.39	2.03	3.53	3.32	3.69	3.16	4.81	3.94
Actinomycetes	0.18	0.33	0.76	5.79	5.23	ND	5.45	4.00	4.04	6.22	1.32	1.64	2.03	0.14	1.34

[a] Peak name represents type of organism and the amounts are given in percentage, ND: Not detected

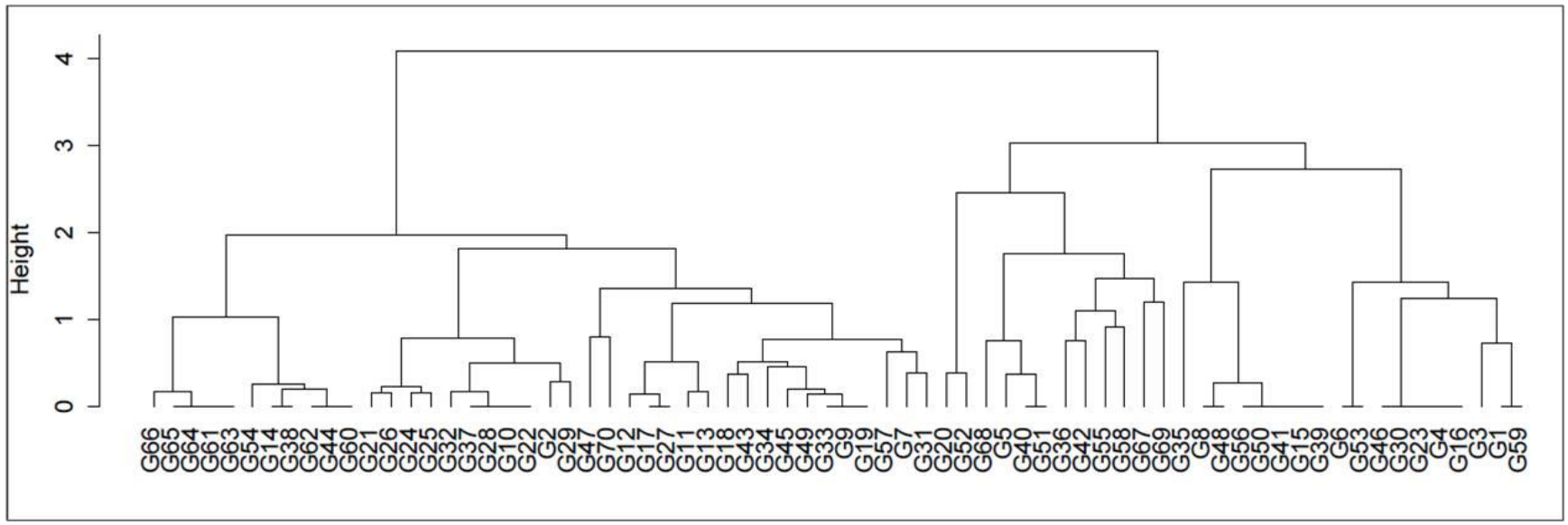

Fig. S1 Cluster dendrogram of the isolates based on their biochemical and carbohydrate utilization profile

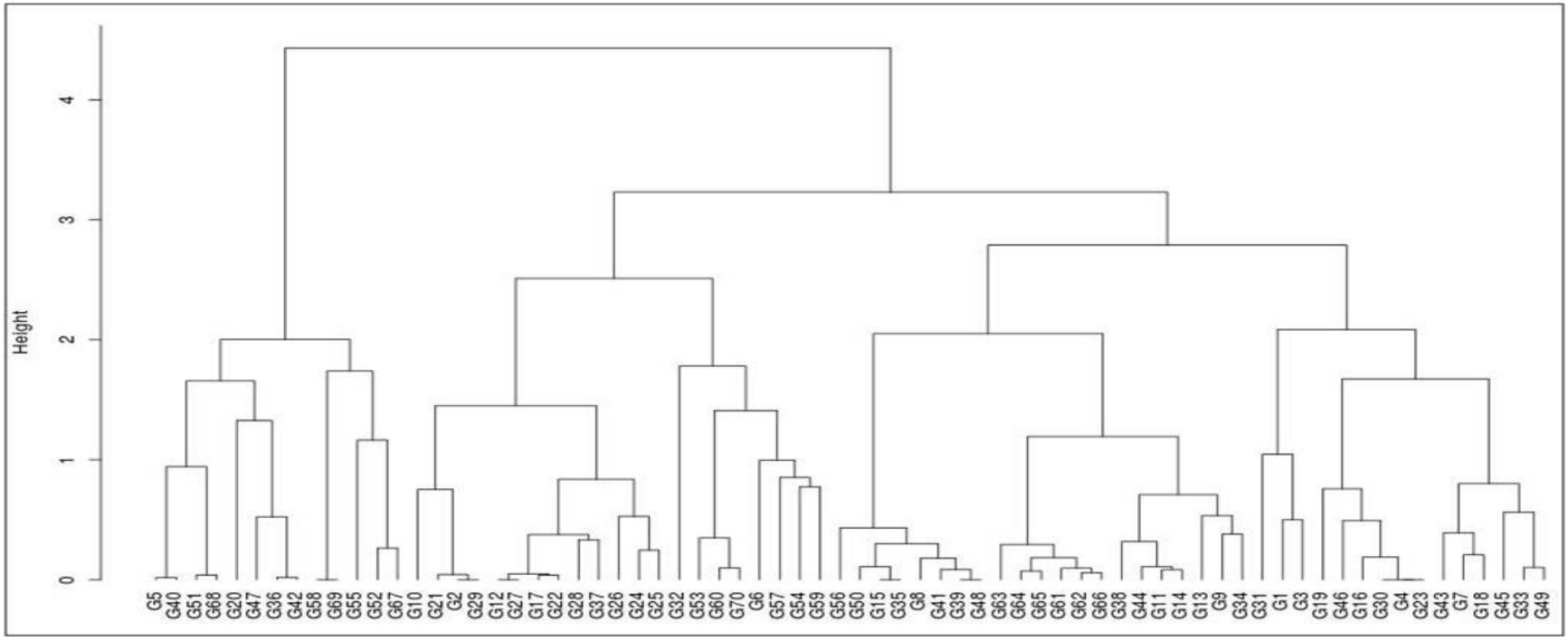

Fig. S2 Cluster analysis based on the major FAMEs of the isolates

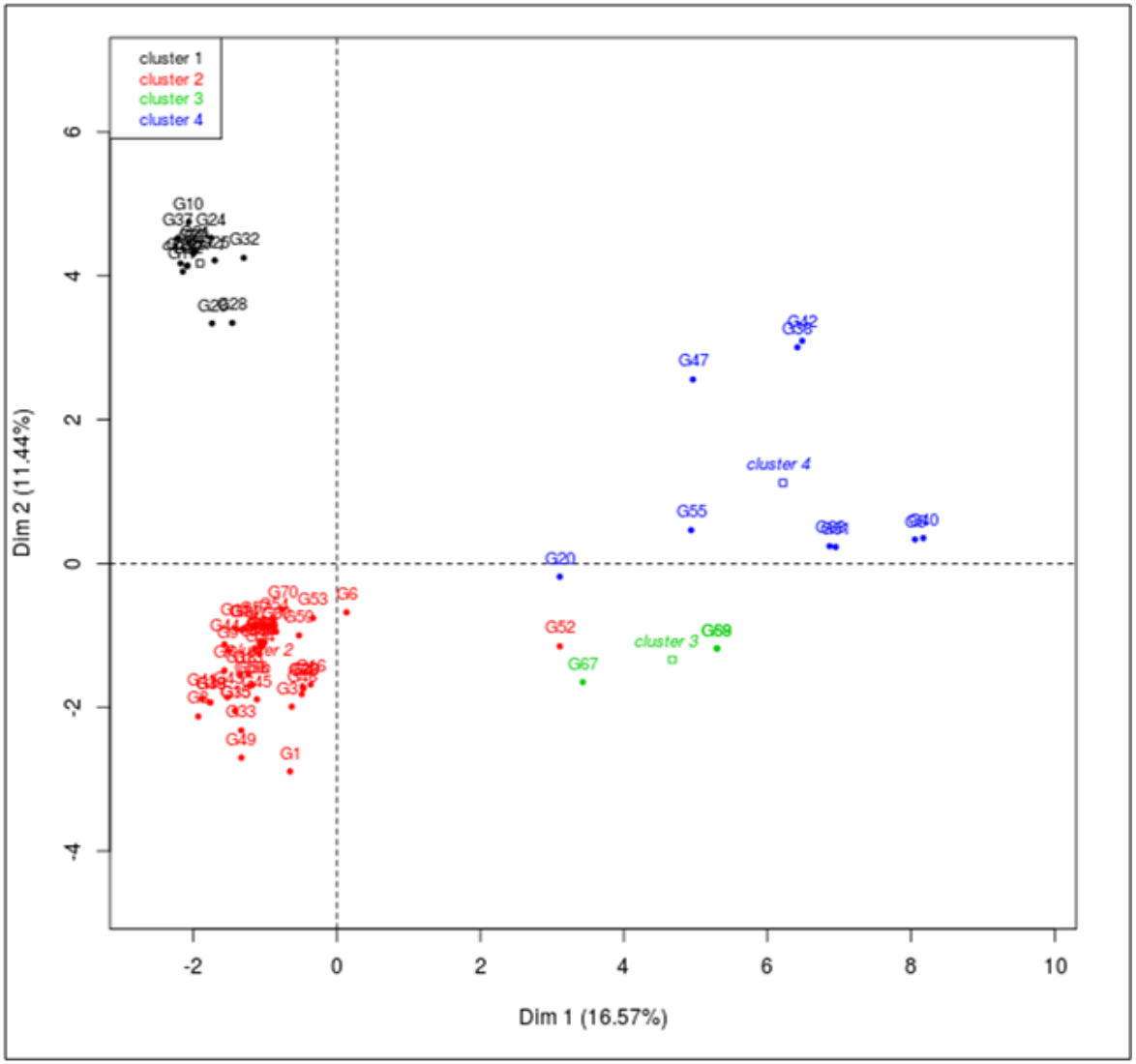

Fig. S3 Cluster dendrogram of the isolates based on their major FAMEs