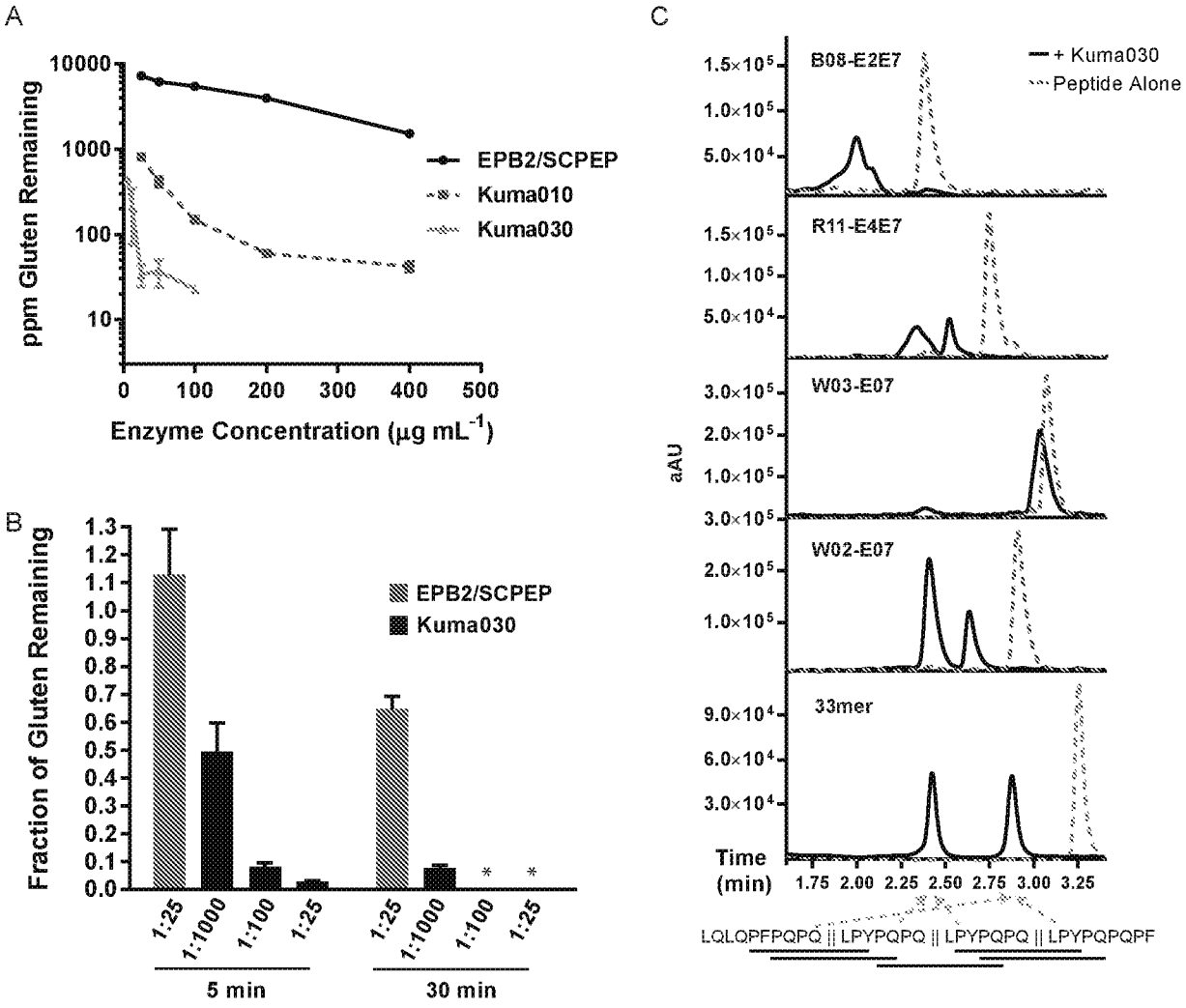
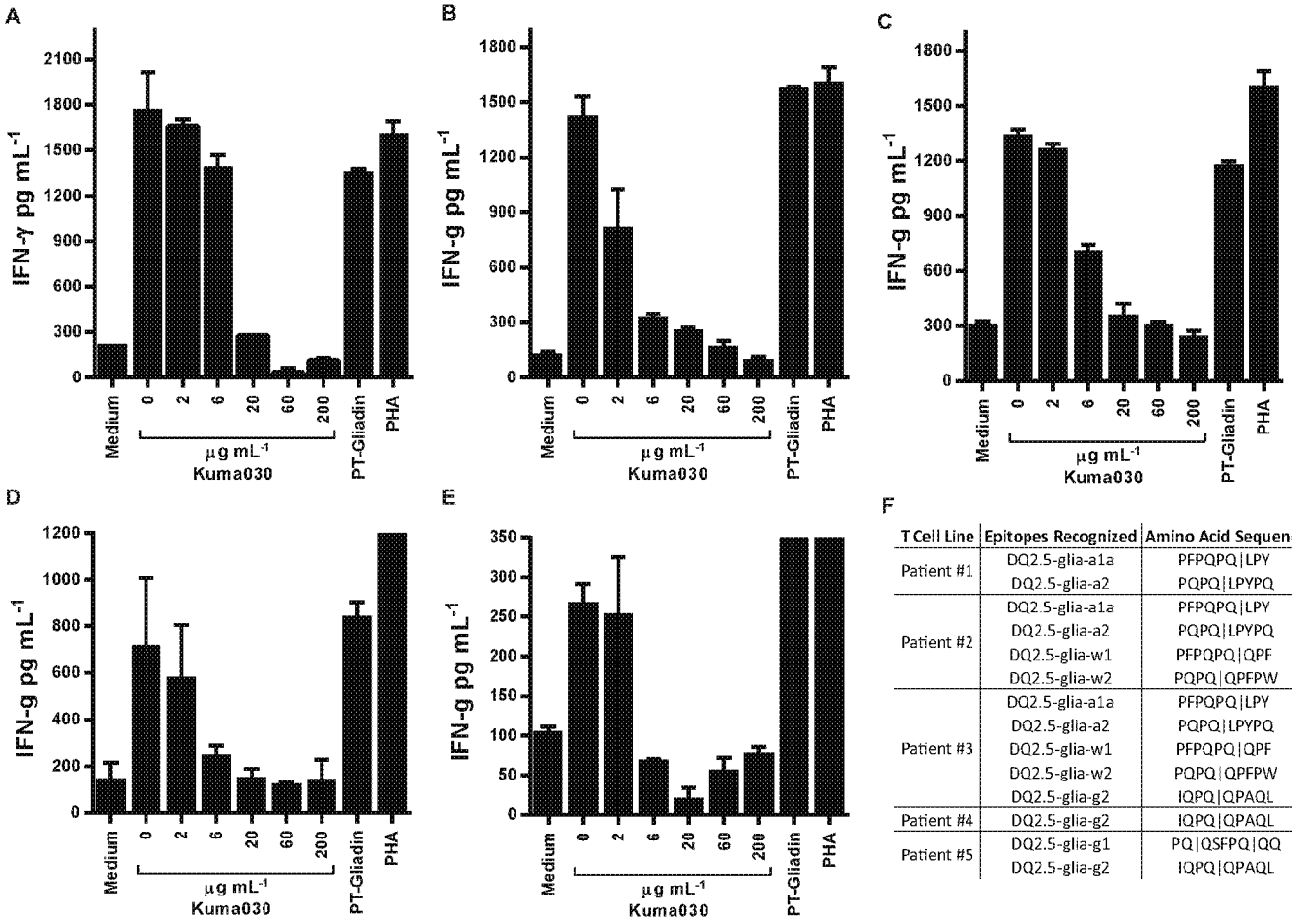

A
ppm Gluten Remaining
10000
1000
100
10
0
100
200
300
400
500
Enzyme Concentration (µg mL-1)
EPB2/SCPEP
Kuma010
Kuma030
B
Fraction of Gluten Remaining
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
EPB2/SCPEP
Kuma030
1:25
1:1000
1:100
1:25
1:25
1:1000
1:100
1:25
5 min
30 min
C
aAU
B08-E2E7
+ Kuma030
Peptide Alone
1.5×10⁵
1.0×10⁵
5.0×10⁴
R11-E4E7
1.5×10⁵
1.0×10⁵
5.0×10⁴
W03-E07
3.0×10⁵
2.0×10⁵
1.0×10⁵
3.0×10⁵
W02-E07
2.0×10⁵
1.0×10⁵
33mer
9.0×10⁴
6.0×10⁴
3.0×10⁴
Time (min)
1.75
2.00
2.25
2.50
2.75
3.00
3.25
LQLQPFPQPQ || LPYPQPQ || LPYPQPQ || LPYPQPQPF

Figure 1



F

T Cell Line	Epitopes Recognized	Amino Acid Sequence
Patient #1	DQ2.5-glia-a1a	PFPQPQ|LPY
	DQ2.5-glia-a2	PQPQ|LPYPQ
Patient #2	DQ2.5-glia-a1a	PFPQPQ|LPY
	DQ2.5-glia-a2	PQPQ|LPYPQ
	DQ2.5-glia-w1	PFPQPQ|QPF
	DQ2.5-glia-w2	PQPQ|QPFPW
Patient #3	DQ2.5-glia-a1a	PFPQPQ|LPY
	DQ2.5-glia-a2	PQPQ|LPYPQ
	DQ2.5-glia-w1	PFPQPQ|QPF
	DQ2.5-glia-w2	PQPQ|QPFPW
	DQ2.5-glia-g2	IQPQ|QPAQL
Patient #4	DQ2.5-glia-g2	IQPQ|QPAQL
Patient #5	DQ2.5-glia-g1	PQ|QSFPQ|QQ
	DQ2.5-glia-g2	IQPQ|QPAQL

Figure 2

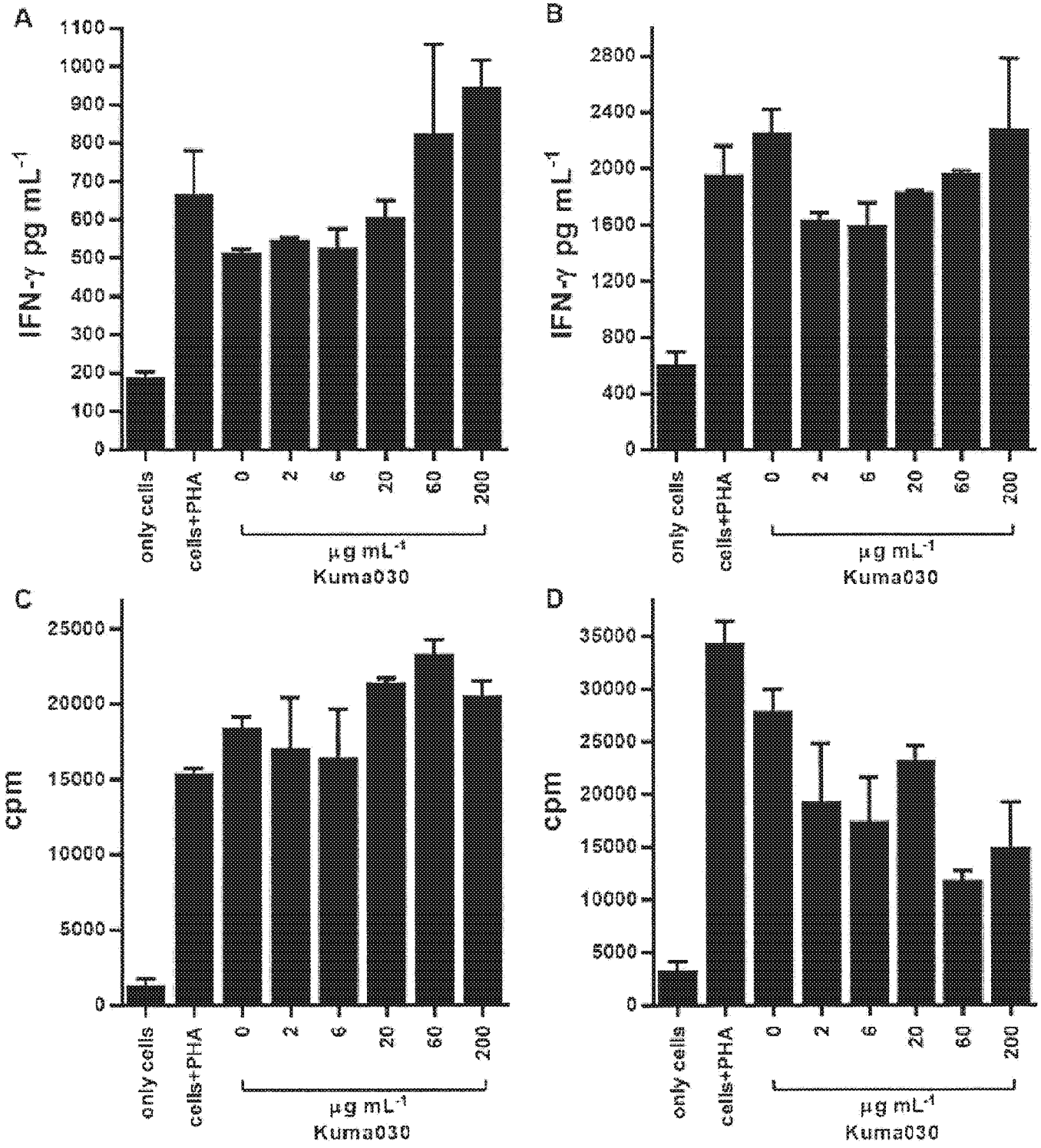

A
IFN-γ pg mL-1
1100
1000
900
800
700
600
500
400
300
200
100
0
only cells
cells+PHA
0
2
6
20
60
200
μg mL-1
Kuma030
B
IFN-γ pg mL-1
2800
2400
2000
1600
1200
800
400
0
only cells
cells+PHA
0
2
6
20
60
200
μg mL-1
Kuma030
C
cpm
25000
20000
15000
10000
5000
0
only cells
cells+PHA
0
2
6
20
60
200
μg mL-1
Kuma030
D
cpm
35000
30000
25000
20000
15000
10000
5000
0
only cells
cells+PHA
0
2
6
20
60
200
μg mL-1
Kuma030

Figure 3

Figure 4

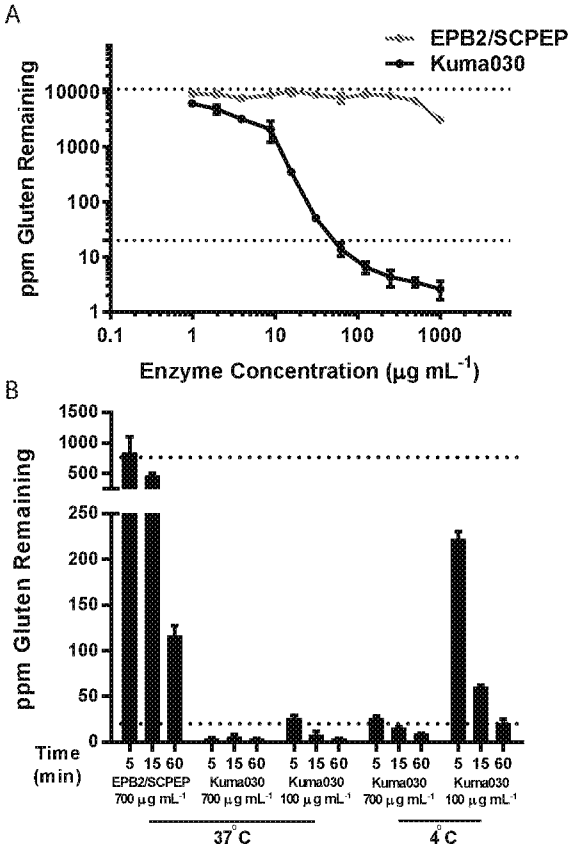

A
EPB2/SCPEP
Kuma030
ppm Gluten Remaining
10000
1000
100
10
1
0.1
1
10
100
1000
Enzyme Concentration (µg mL-1)
B
ppm Gluten Remaining
1500
1000
500
250
200
150
100
50
0
Time (min)
5 15 60
EPB2/SCPEP 700 µg mL-1
Kuma030 700 µg mL-1
Kuma030 100 µg mL-1
Kuma030 700 µg mL-1
Kuma030 100 µg mL-1
37° C
4° C

Figure 5

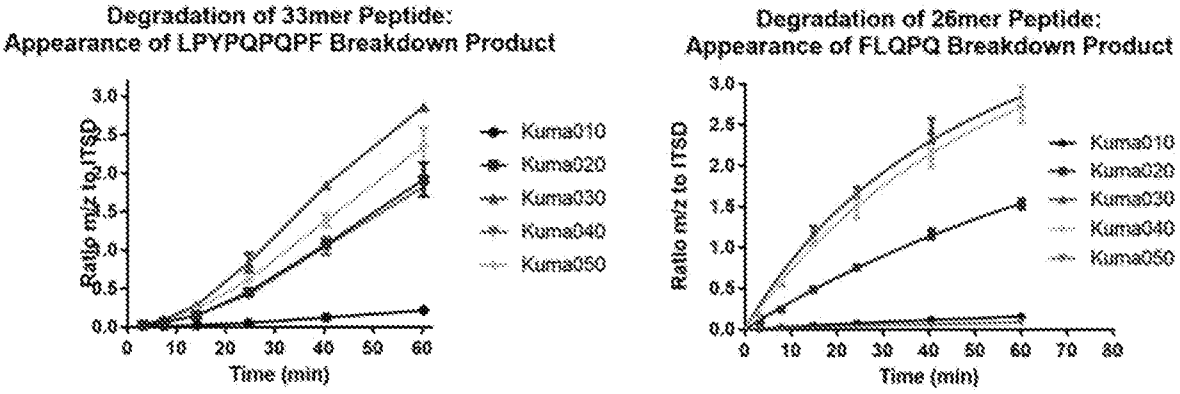

Degradation of 33mer Peptide:
Appearance of LPYPQPQPF Breakdown Product
Ratio m/z to ITSD
Time (min)
Kuma010
Kuma020
Kuma030
Kuma040
Kuma050
Degradation of 26mer Peptide:
Appearance of FLQPQ Breakdown Product
Ratio m/z to ITSD
Time (min)
Kuma010
Kuma020
Kuma030
Kuma040
Kuma050

Figure 6

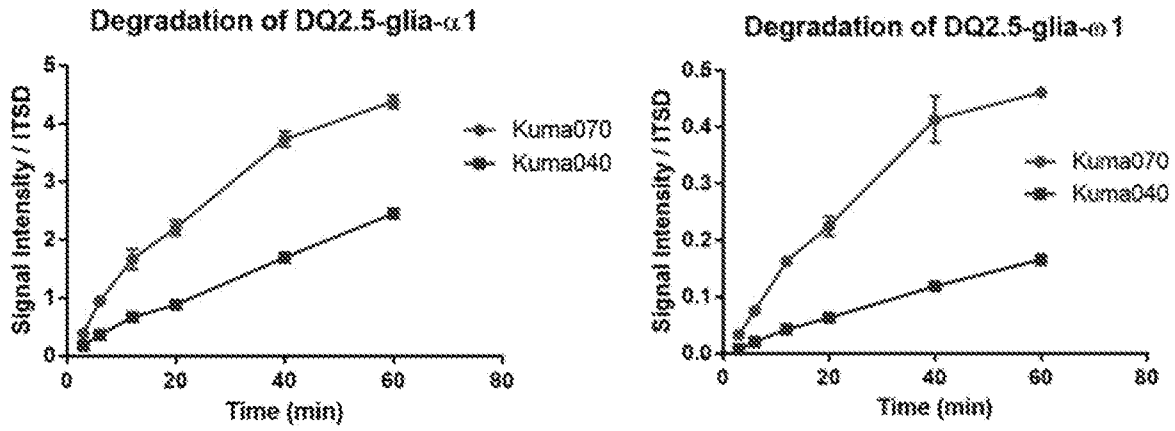

Degradation of DQ2.5-glia-α1
Signal intensity / ITSD
Time (min)
Kuma070
Kuma040
Degradation of DQ2.5-glia-ω1
Signal intensity / ITSD
Time (min)
Kuma070
Kuma040

Figure 7

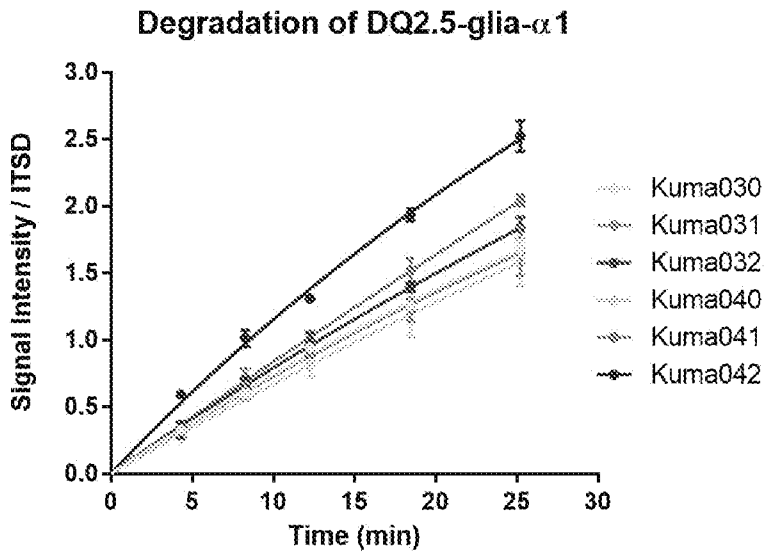
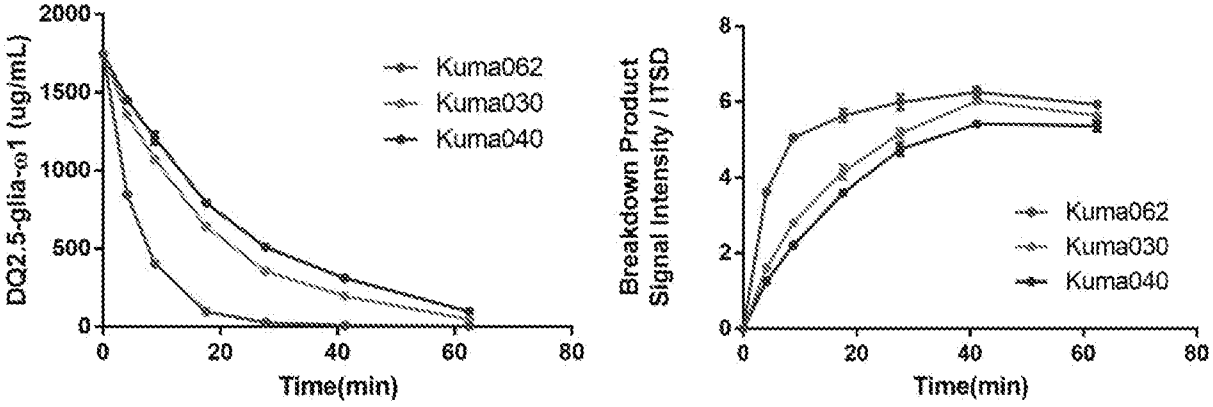

Degradation of DQ2.5-glia-α1
Signal Intensity / ITSD
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
5
10
15
20
25
30
Time (min)
Kuma030
Kuma031
Kuma032
Kuma040
Kuma041
Kuma042

Figure 8


DQ2.5-glia-ω1 (ug/mL)
2000
1500
1000
500
0
0
20
40
60
80
Time(min)
Kuma062
Kuma030
Kuma040
Breakdown Product
Signal Intensity / ITSD
8
6
4
2
0
0
20
40
60
80
Time(min)
Kuma062
Kuma030
Kuma040