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Isaacs

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(54) **GLP-2 FORMULATIONS**

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A61K 38/26 (2006.01)
C07K 14/00 (2006.01)

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(58) **Field of Classification Search** 514/12; 530/308, 399, 324; 435/4, 287.1
See application file for complete search history.

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(57) **ABSTRACT**

The invention is directed to formulations of GLP-2 peptides and analogs thereof exhibiting superior stability following storage and/or exposure to elevated temperatures. The GLP-2 compositions comprise a GLP-2 peptide or an analog thereof, a phosphate buffer, L-histidine, and mannitol.
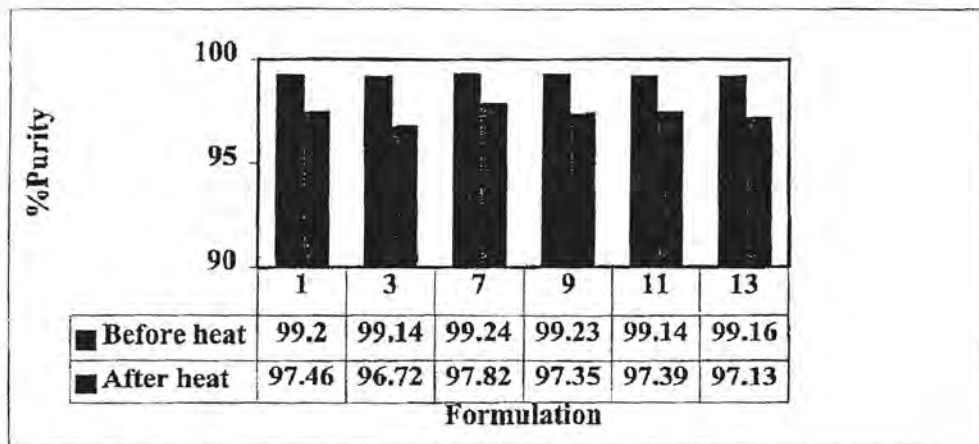
75 Claims, 6 Drawing Sheets

EXHIBIT 102
Carpenter

PENGAD 800-631-6989

Figure 1. Amino acids screening in buffers using heat stress.

	1	3	7	9	11	13
■ Before heat	99.2	99.14	99.24	99.23	99.14	99.16
■ After heat	97.46	96.72	97.82	97.35	97.39	97.13

Formulation

Formulation

1. 10 mM Phosphate, 10 mM Glu
3. 10 mM Phosphate, 10 mM Citrate
7. 10 mM Phosphate, 10 mM Ser
9. 10 mM Phosphate, 10 mM Pro
11. 10 mM Phosphate, 10 mM His
13. 10 mM Phosphate, 10 mM Gly

Figure 2. Screening of buffers using heat stress.
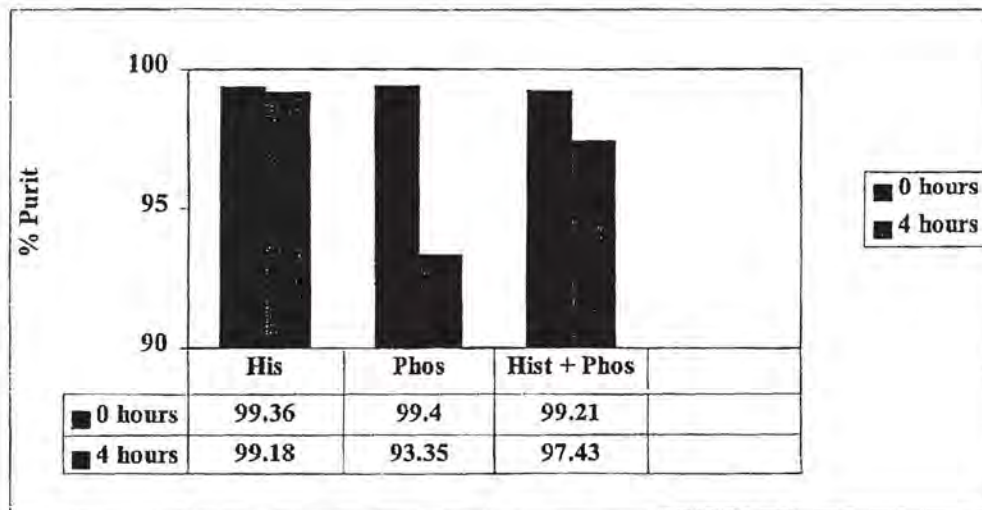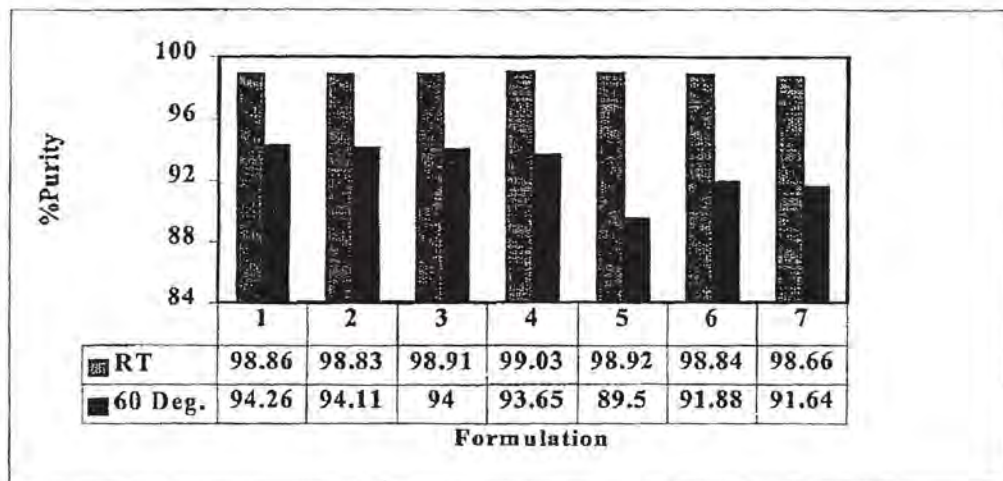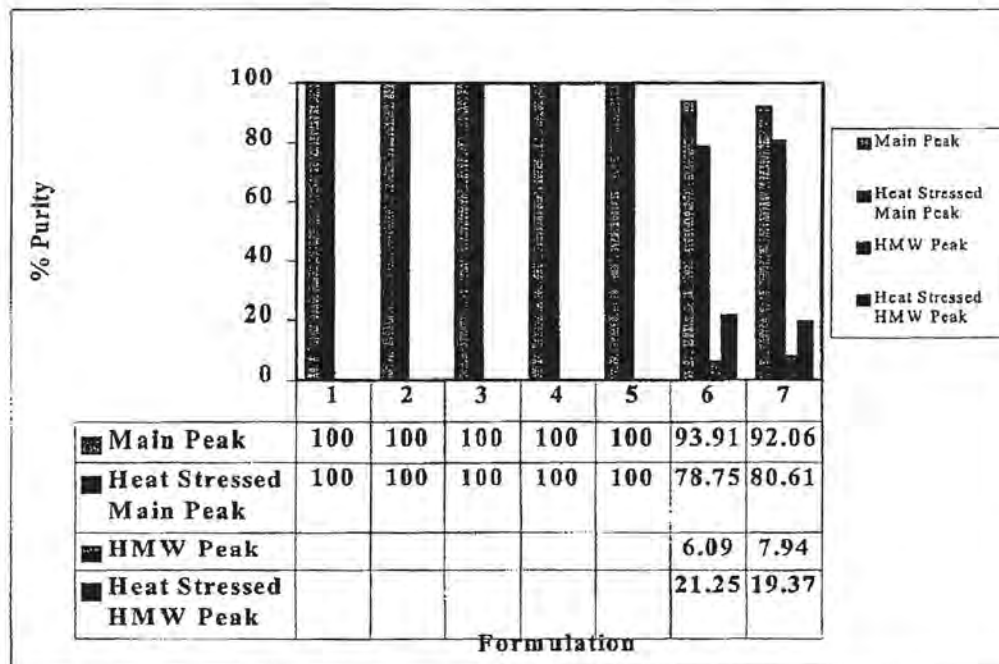

	His	Phos	Hist + Phos
0 hours	99.36	99.4	99.21
4 hours	99.18	93.35	97.43

Figure 3. Screening of Bulking agents analyzed by RP-HPLC.

	1	2	3	4	5	6	7
RT	98.86	98.83	98.91	99.03	98.92	98.84	98.66
60 Deg.	94.26	94.11	94	93.65	89.5	91.88	91.64

Formulation

Formulation

1. 25 mM Histidine, 35 mM phosphate, 3% Mannitol

2. 50 mM Histidine, 35 mM phosphate, 3% Mannitol

3. 75 mM Histidine, 35 mM phosphate, 3% Mannitol

4. 25 mM Histidine, 25 mM phosphate, 3% sucrose

5. 25 mM Histidine, 25 mM phosphate, 3% trehalose

6. 25 mM Histidine, 25 mM phosphate, 3% maltose

7. 25 mM Histidine, 25 mM phosphate, 3% lactose

Figure 4. Bulking agents analyzed by SE-HPLC.

	1	2	3	4	5	6	7
Main Peak	100	100	100	100	100	93.91	92.06
Heat Stressed Main Peak	100	100	100	100	100	78.75	80.61
HMW Peak						6.09	7.94
Heat Stressed HMW Peak						21.25	19.37

Formulation

Formulation

1.   25 mM Histidine, 35 mM phosphate, 3% Mannitol

2.   50 mM Histidine, 35 mM phosphate, 3% Mannitol

3.   75 mM Histidine, 35 mM phosphate, 3% Mannitol

4.   25 mM Histidine, 25 mM phosphate, 3% sucrose

5.   25 mM Histidine, 25 mM phosphate, 3% trehalose

6.   25 mM Histidine, 25 mM phosphate, 3% maltose

7.   25 mM Histidine, 25 mM phosphate, 3% lactose

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