

# NUTRISON DIASON ENERGY HP

## FORMULARY PACK



Nutrison Peptisorb Plus HEHP is a Food for Special Medical Purposes for the dietary management of disease related malnutrition in patients with malabsorption and/or maldigestion and must be used under medical supervision.  
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## BACKGROUND

Hyperglycaemia has been shown to impact patients in a variety of clinical settings such as:

- **Critically ill patients:** Insulin resistance has been observed in up to 80% of critically ill patients<sup>1, 2</sup>.
- **General Medicine** In approximately 38% of in-hospital patients hyperglycemia is present, including patients with a known history of diabetes (26%) and without a history of diabetes pre-admission (12%)<sup>3</sup>.
- **Oncology:** Approximately 8-18% of oncology patients have diabetes<sup>4</sup>. During chemotherapy, hyperglycaemia occurs in approximately 10-30% of patients<sup>5</sup>. Hyperglycaemia can accelerate the progression of a tumour by enhancing the proliferation, migration, and invasion of tumour cells.
- **Diabetes:** Hyperglycaemia is frequently recorded in a variety of hospitalised patients such as patients with pre-diabetes or diabetes. A recent NHS audit estimated 1 in 6 inpatients have diabetes and during a patients admission, hyperglycaemic is often exacerbated due to illness, injury, treatments and changes in eating patterns<sup>6,7</sup>. It's been estimated the number of people with diabetes is growing 5% per year.
- **Stroke patients:** Approximately 30% of all stroke patients have diabetes<sup>8</sup>. In non-diabetic ischemic stroke patients, persistent hyperglycaemia is observed in approximately 33%. Hyperglycaemia and diabetes are associated with poorer outcomes, including higher mortality, poorer neurological and functional outcomes, longer LOS, higher readmission rates and stroke recurrence<sup>5</sup>.

Poor glucose control leads to adverse health outcomes longer length of stays, more frequent readmission and higher mortality rates<sup>9, 10</sup>, while good glycaemic control improves patient outcomes and has been shown to cut costs of care<sup>11, 12</sup>

## EVIDENCE FOR DIABETES SPECIFIC FORMULAS (DSF)

In patients with or at risk of hyperglycaemia, initiation of an enteral tube feeding can be challenging as enteral tube feeding has been reported as an independent risk factor for the onset of hyperglycaemia<sup>3, 13-15</sup>. It has been estimated 34.5% of enteral tube feeding patients experience hyperglycaemia<sup>13</sup>.

DSF have been demonstrated to be a safe and effective strategy in supporting patients in meeting their nutritional requirements while optimising glycaemic control<sup>15</sup>.

DSF have some of the following features compared to standard nutritional formulas:

- Lower carbohydrate content
- Low glycaemic index, e.g. by replacement of high glycaemic-index maltodextrin with low glycaemic-index carbohydrates such as isomaltulose
- Fat enriched in unsaturated fatty acids, particularly monounsaturated fatty acids (MUFA)
- Contains fibre

The American Diabetes Association suggest DSF may be superior to a standard formula (SF) to manage postprandial glucose response, hbA1c levels and insulin response<sup>16</sup>. The European Society For Parenteral and Enteral Nutrition Group endorses the use of DSF for nutritional support of people with obesity and diabetes<sup>15</sup>

### Clinical Benefits

A systematic review and meta-analysis by Elia et al (2005) who assessed the impact of DSF compared to SF for patients with diabetes found DSF significantly reduce the postprandial blood glucose response, lower peak glucose concentration and lower glucose area under the curve. Additionally, the study found insulin requirements were lower (26-71%) and there were fewer complications with DSF<sup>17</sup>. The study concluded short- and long-term use of DSF are associated with improved glycaemic control in comparison with SF.

A later systematic review supported these findings that DSF are effective at managing glycaemic status of inpatients with diabetes on enteral tube feeding by improving postprandial glucose levels, insulin response and haemoglobin A1c (HbA1c) levels<sup>18</sup>.

A more recent systematic review and meta-analysis<sup>19</sup> analysing 18 studies involving 845 adult patients with type 1, type 2 diabetes or stress-induced hyperglycaemia found the use of a high MUFA DSF compared with a SF was associated with a statistically significant decrease in peak postprandial glucose, incremental glucose response, mean blood glucose levels, HbA1c change, mean insulin dose and mean blood triglycerides.

## Cost benefits

A retrospective analysis of 85,481 inpatients hospitalised over a 10 years (2000-20009) demonstrated that DSF reduced hospital length of stay by approximately one day and provided cost savings of \$2586 USD per patient during their admission in comparison with a SF<sup>20</sup>.

Similar findings were observed in a retrospective analysis of 952 intensive care unit patients over a one to five-year period. Those on a DSF had a decrease in mortality, had a shorter length of stay in ICU by 2 days and had significantly lower costs compared to patients on a SF (\$6700 vs. \$9200 USD)<sup>11</sup>.

Furthermore, the study found those with a DSF had reduced insulin requirements and need for insulin prescription which has been demonstrated in several studies<sup>12</sup>

## Summary

In summary, 34.5% of enteral tube feeding patients experience hyperglycaemia. Evidence suggests DSF are an effective and safe strategy to optimise glycaemic control in enteral feeding. DSF have been shown to decrease:

1. Peak of postprandial glucose<sup>17-19</sup>
2. Incremental glucose response<sup>19</sup>
3. Mean blood glucose levels<sup>19</sup>
4. hbA1c levels<sup>17, 19</sup>
5. Mean blood triglycerides<sup>19</sup>
6. Insulin requirements (26-71% lower)<sup>17-19</sup>
7. Length of stay<sup>11, 20</sup>
8. Cost <sup>11, 20</sup>

## NUTRISON DIASON ENERGY HP

Nutrison Diason Energy HP is a Food for Special Medical Purposes for use under medical supervision. Nutrison Diason Energy HP is for the dietary management of disease-related malnutrition in patients with Diabetes Mellitus or hyperglycaemia with higher energy and protein needs.

Nutrison Diason Energy HP is a new, unique, high protein, low glycaemic index tube feed with elevated levels of monounsaturated fatty acids designed to optimise glycaemic control while meeting the nutritional needs of patients with hyperglycaemia.

- The level of lactose in Nutrison Diason Energy HP is Lactose <0.025g/100ml. It is suitable for administration via a nasogastric tube, gastrostomy or jejunostomy.

Nutrison Diason Energy HP key features, which may optimise glycaemic control while meeting a patient's nutritional requirements, include:

- 1.5kcal/ml
- High protein feed - 7.7g protein/100ml, 21% energy from protein
- Low Glycaemic Index of 36
- 60% of fat from monounsaturated fatty acids
- Fibre- 1.5g/100ml (MF6 blend)
- Lactose <0.025g/100ml
- Osmolarity level 395 mOmol/l

The nutritionally complete volumes based on the UK DRV's are shown below:

	NUTRITIONALLY COMPLETE VOLUMES (ML)*			
	Males 19-49 yrs	Males 50+ yrs	Females 19-49 yrs	Females 50+ yrs
Nutrison Diason Energy HP	1000	1000	1000	1000

\*Excluding Na, K & Cl

Nutrison Diason Energy HP is available in 1000ml OpTri bottles. The table below lists the price and the order codes.

PRESENTATION	LIST PRICE	SAP CODES	PIP CODES	AAH CODES
1000ml OpTri bottle	£15.40	164947	415-4159	NUT0478P

## HOW DOES NUTRISON DIASON ENERGY HP MEET PATIENTS' NUTRITIONAL NEEDS?

Nutrison Diason Energy HP is a new, unique, high protein, low glycaemic index tube feed with elevated levels of monounsaturated fatty acids designed to optimise glycaemic control while meeting the nutritional needs of patients with hyperglycaemia.

### Energy

The energy content of Nutrison Diason Energy HP is 1.5kcal/ml. The higher amount of energy is practically suitable for patients with high energy, or low fluid requirements, as well as for overnight feeding. Nutrison Diason Energy HP has increased energy, providing more than standard enteral tube feeds (1.0 -1.2 kcal/ml), however, not reaching very high energy densities (2.0 kcal/ml). The total energy provided will depend on the volume prescribed by a Dietitian. This will vary depending on an individual's physical activity levels and condition.

### Protein

Nutrison Diason Energy HP contains 7.7g of protein per 100ml, providing 21% of the total energy as protein. This product is designed for those with hyperglycaemia who may have higher protein requirements due to metabolic stress and/or require additional protein for wound healing/pressure sores or need to meet their protein requirements in a smaller volume.

Nutrison Diason energy HP contains 40% soy protein and 60% casein. Soy protein has been used for the beneficial effects on blood lipid profiles in diabetic patients who have dyslipidaemia<sup>21</sup>. Casein protein has a high biological value and by mixing with soy protein, the World Health Organisation recommendations for amino acid requirements in adults are fully met by the protein composition.

### Carbohydrate

The total carbohydrate content of Nutrison Diason Energy HP is 11.7g per 100ml, providing 31% of the total energy. Nutrison Diason Energy HP contains a relatively low amount of carbohydrates in comparison with other enteral tube feeds to provide a lower plasma glucose profile. Unlike most other enteral tube feeds with a carbohydrate source predominantly from maltodextrin. Nutrison Diason Energy HPs carbohydrate sources are maltodextrin and isomaltulose. Nutrison Diason Energy HP contains 3.95g of isomaltulose per 100ml.

Isomaltulose is virtually completely hydrolysed and is absorbed in the small intestine<sup>22</sup>. The rate of hydrolysis is very slow, in comparison to sucrose and maltose<sup>22</sup>. Due to this slower hydrolysis in the gastrointestinal passage, rises in blood glucose and insulin levels after isomaltulose intake are lower than those caused by sucrose.

## **Fat**

The total fat content of Nutrison Diason Energy HP is 7.72g per 100ml, providing 46% of total energy. The source of fat in Nutrison Diason Energy HP is a blend of rapeseed, sunflower and fish oil, which provides a high proportion of MUFA and a low proportion of saturated and polyunsaturated fatty acids.

In Nutrison Diason Energy HP, 60% of the fat is from MUFA. Substituting MUFAs for saturated fatty acids has been shown to have beneficial effects on serum lipid levels<sup>23</sup>. Diabetes UK recommends that saturated fats should be limited and replaced by unsaturated fats, predominantly MUFAs<sup>24</sup>. Furthermore, Nutrison Diason Energy HP contains fish oils, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) at a level of 500mg/1000ml.

## **Fibre**

Nutrison Diason Energy HP contains 1.5 g of fibre per 100 ml with 80% soluble fibres and 20% insoluble fibres.

Diason Energy HP contains fibre from six different natural sources (arabic gum, oligofructose, inulin, soy polysaccharide, resistant starch and cellulose), which contain both well fermentable and less well fermentable fibre. A range of fibre in the diet is desirable: fermentable fibre is important for the generation of short-chain fatty acids and restoration of a balanced microflora and less well fermented fibre enhances stool consistency and viscosity, improves intestinal muscle bulk and contributes to reduced bacterial translocation<sup>25</sup>.

## **Micronutrients**

Diason Energy HP contains all micronutrients in amounts, which comply with the ranges given for FSMP per 100 kcal.

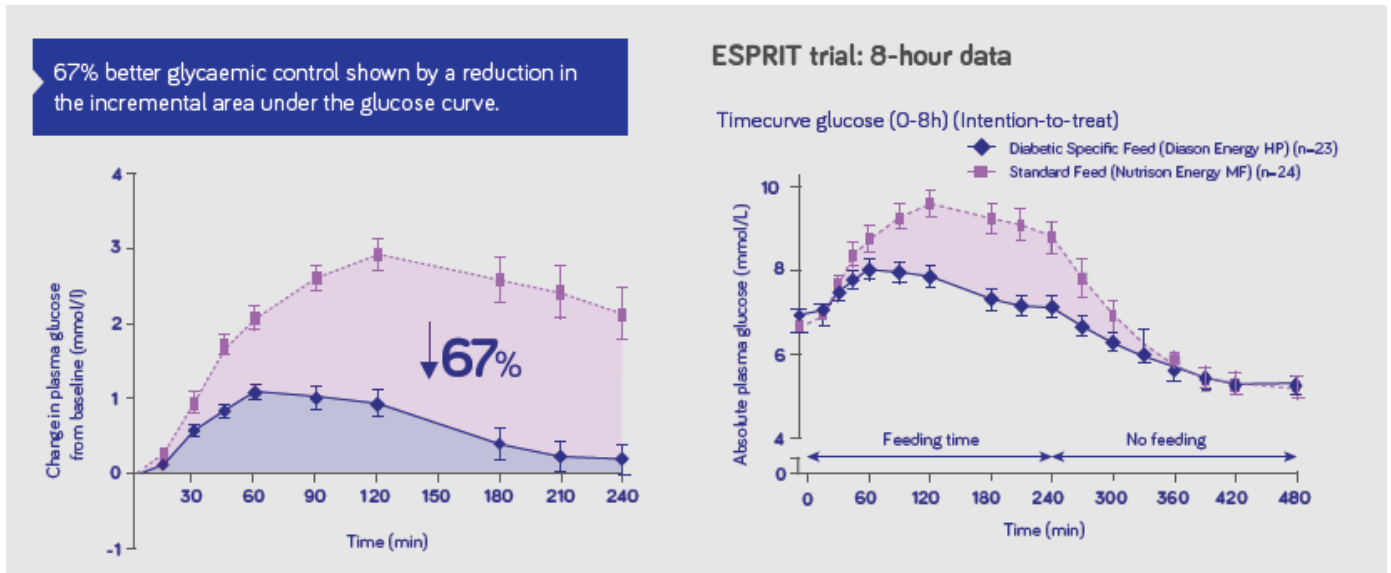
**CLINICAL EVIDENCE FOR NUTRISON DIASON ENERGY HP**

**Improved glucose profile in patients with type 2 diabetes with a new, high-protein, diabetes specific tube feed during 4 hours of continuous feeding<sup>26</sup>**

Twenty-three community patients with diabetes were recruited into a randomized, controlled, double-blinded crossover study to investigate the effects of a diabetes specific formula (DSF), Nutrison Diason Energy HP with a standard formula (SF), Nutrison Energy Multifibre on glucose profile during 4 hours of continuous feeding and an additional 4 hours after stopping the feeding.

The study found that during the 4-hour feeding period, DSF compared with SF resulted in a lower mean delta glucose concentration in the 3- to 4-hour period ( $0.3 \pm 1.0$  and  $2.4 \pm 1.5$  mmol/L;  $P < .001$ ). Also, the (delta) peak concentrations, (delta) mean concentrations, and incremental area under the curve (iAUC) for glucose and insulin were significantly lower during DSF compared with SF feeding (all comparisons:  $P < .001$ ). Furthermore, fewer patients experienced hyperglycaemia ( $>10$  mmol/L) on DSF compared with SF (2 vs 11,  $P = .003$ , respectively). No differences in the number of patients with hypoglycaemia ( $<3.9$  mmol/L) were observed. No significant differences in tolerance were observed.

In summary, administration of Nutrison Diason Energy HP, a high-protein DSF during 4 hours of continuous feeding resulted in lower glucose and insulin levels compared with a fibre-containing SF in ambulant, non-hospitalised patients with type 2 diabetes. These data suggest that Nutrison Diason Energy HP may contribute to lower glucose levels in these patients.





This information is intended for healthcare professionals only

## DATA CARD

### Description

Nutrison Dison Energy HP is a Food for Special Medical Purposes for use under medical supervision. Nutrison Dison Energy HP is a nutritionally complete\*, ready to use, high energy (1.5kcal/ml), high protein (7.7g/100ml, 21% of energy from protein) fibre containing tube feed, for the dietary management of disease related malnutrition in patients with diabetes mellitus or hyperglycaemia with higher energy and protein needs. Suitable as a sole source of nutrition. Nutrison Dison Energy HP is available in 1000ml OpTri bottles.

### Indications

For enteral use only.

### Contraindications

Not suitable for children under 12 years of age.  
Not suitable for patients with galactosaemia.  
Not suitable for patients requiring a fibre free diet.

### Precautions

Use with caution in children 12 years and over.  
Coagulation in the digestive tract, e.g. due to drug interaction, may occur.  
Careful monitoring is required.

### Directions for use

Shake well before opening. Use at room temperature.  
Maximum hanging time 24 hours.  
OpTri bottles can be attached directly to a Flocare giving set.

### Storage

Store in a cool, dry place (5-25°C) and away from direct sunlight.  
Once opened, close the OpTri bottle and store in a refrigerator for a maximum of 24 hours. Discard any unused content after 24hrs.

### Shelf life

12 months. Best before date: See individual packaging.

### Ingredients

Water, maltodextrin, vegetable oils (rapeseed oil, sunflower oil), cow's milk protein caseinate, isomaltulose\*, partially hydrolysed soy protein, dietary fibres (inulin, oligofructose, arabic gum, soy polysaccharides, cellulose, resistant starch), flavouring, fish oil, acidity regulator (citric acid), calcium carbonate, potassium chloride, emulsifier (soy lecithin), sodium citrate, potassium citrate, magnesium hydroxide, carotenoids (contains soy) (β-carotene, lutein, lycopene oleoresin from tomatoes), potassium hydroxide, dipotassium hydrogen phosphate, choline chloride, sodium L-ascorbate, ferrous lactate, DL-α-tocopheryl acetate, zinc sulphate, retinyl acetate, chromium chloride, copper gluconate, manganese sulphate, calcium D-pantothenate, nicotinamide, sodium selenite, cyanocobalamin, thiamin hydrochloride, D-biotin, pteroylmonoglutamic acid, cholecalciferol, pyridoxine hydrochloride, riboflavin, potassium iodide, sodium fluoride, sodium molybdate, phytomenadione.

\*Isomaltulose is a source of glucose and fructose.

AVERAGE CONTENTS		per 100ml	per 1000ml
<b>Energy:</b>	kcal	150	1500
	kJ	625	6250
<b>Protein:</b>	g	7.7	77.0
nitrogen	g	1.2	12.0
% of total energy	%	21	21
<b>Carbohydrate:</b>	g	11.7	117
<b>Polysaccharides</b>	g	6.9	69
- sugars	g	4.5	45.0
- lactose	g	<0.025	<0.25
% of total energy	%	31	31
<b>Fat:</b>	g	7.7	77.0
- saturates	g	0.8	8.0
- monounsaturates	g	4.6	46
- polyunsaturates	g	2.3	23
- DHA	mg	20.0	200
- EPA	mg	29.9	299
% of total energy	%	46	46
<b>Fibre:</b>	g	1.5	15.0
soluble	g	1.2	12.0
insoluble	g	0.3	3.0
% of total energy	%	2	2
<b>Minerals:</b>			
sodium	mg (mmol)	131 (5.7)	1310 (57.0)
potassium	mg (mmol)	200 (5.1)	2000 (51.0)
chloride	mg (mmol)	98 (2.8)	980 (28.0)
calcium	mg (mmol)	82 (2.0)	820 (20.0)
phosphorus	mg (mmol PO <sub>4</sub> )	82 (2.7)	820 (27.0)
magnesium	mg (mmol)	37 (1.5)	370 (15.0)
iron	mg	1.9	19.0
zinc	mg	1.4	14.0
copper	mg	0.21	2.10
manganese	mg	0.38	3.80
fluoride	mg	0.12	1.20
molybdenum	µg	12	120
selenium	µg	8.7	87.0
chromium	µg	14	140
iodine	µg	16	160
<b>Vitamins:</b>			
vitamin A	µg	119	1190
vitamin D	µg	1.0	10.0
vitamin E	mg (α-TE)	3.6	36.0
vitamin K	µg	7.7	77.0
thiamin	mg	0.23	2.30
riboflavin	mg	0.24	2.40
niacin	mg (mg NE)	0.90 (2.6)	9.00 (26.0)
pantothenic acid	mg	0.77	7.70
vitamin B <sub>6</sub>	mg	0.24	2.40
folic acid	µg	42	420
vitamin B <sub>12</sub>	µg	0.72	7.20
biotin	µg	5.8	58.0
vitamin C	mg	22	220
<b>Others:</b>			
carotenoids	mg	0.30	3.00
choline	mg	53	530
<b>Water:</b>	g	77	770
osmolarity	mOsmol/l	395	395
osmolality	mOsmol/kg H <sub>2</sub> O	515	515
potential renal solute load	mOsmol/l	602	602
acidity	pH	6.7	6.7

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