

# Insulinaggypt

## For Life

Emad El Arabi

P.M. Diabetes Care Line MUP

# With Insulin



## Discovery of insulin

- Banting & Best extracted insulin from dog -1921

- Nobel Prize in 1923





**Our dream is real**



المهمن الطبية  
للأدوية

**MUP** Medical Union  
Pharmaceuticals

MUP.Tech • إم يو بي. تك

# Site Location

## 6<sup>th</sup> of October City



- The site is in the industrial zone of the city and is surrounded by manufacturing facilities of other multinational and national pharmaceutical companies. To the north and west side of the site are main roads of the industrial zone, to the east side is a Universal® manufacturing plant and to the south is a pharmaceutical company (Hikma).
- The site area is 9967 m<sup>2</sup>. The built area includes the manufacturing plant, utilities and other support activities (connecting corridor, security room, administration building, power station room, cafeteria and water tank for fire fighting purposes).
- The facility is 14 prefabricated module type of construction. Eight are for production and six are for utilities.
- The facility modules were fabricated by Pharmadule (Swedish company) and were designed and built to conform to EU GMP standards.
- The facility construction started in September 1997. The units were qualified in Sweden prior to shipment to Egypt site in April 1998. The facility, utilities and equipment installation qualifications were completed in October 1998. Insulin production started in November 1998.

# Insulinagyp Process

Change Rooms (For Class C area)



Autoclave & Oven



Vial Washer exit



Formulation Area



# Insulinaggypt

The Gold Standard  
Egyptian Human Insulin



**Insulin crystals supplied  
by Eli Lilly, and Company**



# Insulinagypt

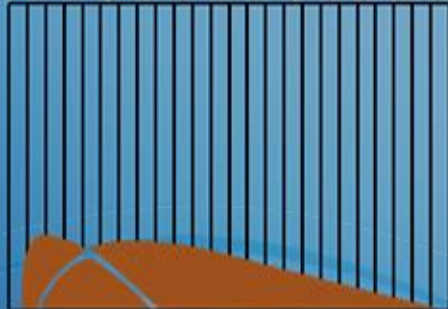
## The Gold Standard Egyptian Human Insulin

Insulin crystals supplied  
by Eli Lilly, and Company



Premixed insulin

0 2 4 6 8 10 12 14 16 18 20 22 24



**Onset:** within 30 minutes  
**Maximum effect:** 2-8 hours  
**Duration:** 24 hours



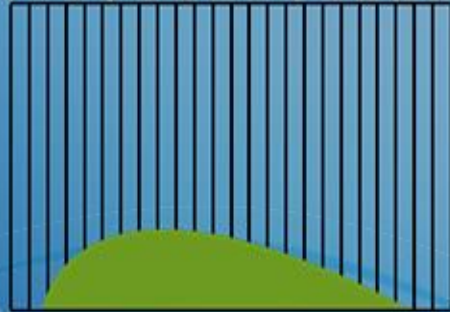


# Insulinagypt

## The Gold Standard Egyptian Human Insulin

Insulin crystals supplied  
by Eli Lilly, and Company

0 2 4 6 8 10 12 14 16 18 20 22 24



**Onset:** within 1.5 hours  
**Maximum effect:** 4-12 hours  
**Duration:** 24 hours



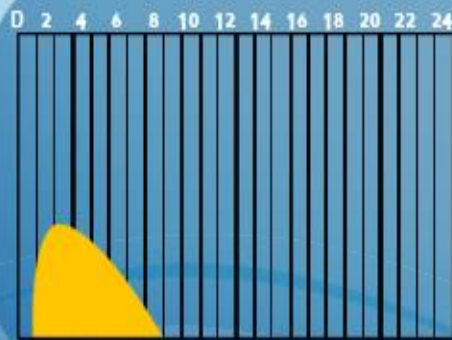
**Intermediate-acting insulin  
(isophane human insulin, NPH)**



# Insulinagpyt

## The Gold Standard Egyptian Human Insulin

Insulin crystals supplied  
by Eli Lilly, and Company



**Onset:** within 30 minutes  
**Maximum effect:** 1-3 hours  
**Duration:** 8 hours



**Short-acting insulin  
(soluble human insulin)**



# Management of Hyperglycemia in Type 2 Diabetes, 2015: A Patient-Centered Approach

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*Update* to a Position Statement of the American Diabetes Association (ADA)  
and the European Association for the Study of Diabetes (EASD)

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Healthy eating, weight control, increased physical activity & diabetes education

**Mono-therapy**

Efficacy\*  
Hypo risk.....  
Weight.....  
Side effects.....

**Metformin**

high.....  
low risk.....  
neutral/loss.....  
GI / lactic acidosis.....  
low.....

**Metformin intolerance or contraindication**

*If HbA1c target not achieved after ~3 months of monotherapy, proceed to 2-drug combination (order not meant to denote any specific preference - choice dependent on a variety of patient- & disease-specific factors):*

**Dual therapy**

Efficacy\*  
Hypo risk.....  
Weight.....  
Side effects.....  
Costs.....

**HbA1c ≥9%**

Metformin +	Metformin +	Metformin +	Metformin +	Metformin +	Metformin +
<b>Sulfonylurea</b>	<b>Thiazolidinedione</b>	<b>DPP-4 inhibitor</b>	<b>SGLT2 inhibitor</b>	<b>GLP-1 receptor agonist</b>	<b>Insulin (basal)</b>
high efficacy moderate risk hypo weight gain hypoglycemia low costs	high efficacy low risk hypo weight gain edema, HF, fxs low costs	intermediate efficacy low risk hypo neutral weight rare side effects high costs	intermediate efficacy low risk hypo weight loss GU, dehydration high costs	high efficacy low risk hypo weight loss GI side effects high costs	highest efficacy high risk hypo weight gain hypoglycemia variable costs

*If HbA1c target not achieved after ~3 months of dual therapy, proceed to 3-drug combination (order not meant to denote any specific preference - choice dependent on a variety of patient- & disease-specific factors):*

**Triple therapy**

**Uncontrolled hyperglycemia (catabolic features, BG ≥300-350 mg/dl, HbA1c ≥10-12%)**

Metformin +	Metformin +	Metformin +	Metformin +	Metformin +	Metformin +
Sulfonylurea +	Thiazolidinedione +	DPP-4 Inhibitor +	SGLT-2 Inhibitor +	GLP-1 receptor agonist +	Insulin (basal) +
or TZD	or SU	or SU	or SU	or SU	or TZD
or DPP-4-i	or DPP-4-i	or TZD	or TZD	or TZD	or DPP-4-i
or SGLT2-i	or SGLT2-i	or SGLT2-i	or DPP-4-i	or Insulin <sup>§</sup>	or SGLT2-i
or GLP-1-RA	or GLP-1-RA	or Insulin <sup>§</sup>	or Insulin <sup>§</sup>		or GLP-1-RA
or Insulin <sup>§</sup>	or Insulin <sup>§</sup>				

*If HbA1c target not achieved after ~3 months of triple therapy and patient (1) on oral combination, move to injectables, (2) on GLP-1 RA, add basal insulin, or (3) on optimally titrated basal insulin, add GLP-1-RA or mealtime insulin. In refractory patients consider adding TZD or SGLT2-i:*

**Combination injectable therapy**

Metformin +	Basal Insulin +	Mealtime Insulin	or	GLP-1-RA
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**Insulinaggypt 70/30, N&R**

**Mono-therapy**

- Efficacy\*
- Hypo risk
- Weight
- Side effects
- Costs

Healthy eating, weight control, increased physical activity & diabetes education

**Metformin**

- high
- low risk
- neutral/loss
- GI / lactic acidosis
- low

*If HbA1c target not achieved after ~3 months of monotherapy, proceed to 2-drug combination (order not meant to denote any specific preference – choice dependent on a variety of patient- & disease-specific factors):*

**Dual therapy**

- Efficacy\*
- Hypo risk
- Weight
- Side effects
- Costs

Metformin + <b>Sulfonylurea</b>	Metformin + <b>Thiazolidinedione</b>	Metformin + <b>Insulin (basal)</b>
high efficacy moderate risk weight gain hypoglycemia low costs	high efficacy low risk weight gain edema, HF, fxs low costs	highest efficacy high risk weight gain hypoglycemia variable costs

*If HbA1c target not achieved after ~3 months of dual therapy, proceed to 3-drug combination (order not meant to denote any specific preference – choice dependent on a variety of patient- & disease-specific factors):*

**Triple therapy**

Metformin + <b>Sulfonylurea</b> + TZD or HUMAN Insulin	Metformin + <b>Thiazolidinedione</b> + SU or HUMAN Insulin	Metformin + <b>Insulin (basal)</b> + TZD
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*If HbA1c target not achieved after ~3 months of triple therapy and patient (1) on oral combination, move to injectables, (2) on GLP-1 RA, add basal insulin, or (3) on optimally titrated basal insulin, add GLP-1-RA or mealtime insulin. In refractory patients consider adding TZD or SGL T2-i:*

Metformin +  
HUMAN Basal Insulin +
HUMAN Mealtime Insulin
 or
 GLP-1 RA

**Figure 2C. Anti-hyperglycemic therapy in T2DM: Minimization of costs**

**Figure 3.**  
**Approach**  
**to starting**  
**&**  
**adjusting**  
**insulin in**  
**T2DM**

# Basal Insulin

(usually with metformin +/- other non-insulin agent)

**Insulinagyp<sup>t</sup> N**

- **Start:** 10U/day or 0.1-0.2 U/kg/day
- **Adjust:** 10-15% or 2-4 U once-twice weekly to reach FBG target.
- **For hypo:** Determine & address cause; ↓ dose by 4 units or 10-20%.

If not controlled after FBG target is reached (or if dose > 0.5 U/kg/day), treat PPG excursions with meal-time insulin. (Consider initial GLP-1-RA trial.)

**Add 1 rapid insulin\* injections before largest meal**

**Insulinagyp<sup>t</sup> R**

- **Start:** 4U, 0.1 U/kg, or 10% basal dose. If A1c<8%, consider ↓ basal by same amount.
- **Adjust:** ↑ dose by 1-2 U or 10-15% once-twice weekly until SMBG target reached.
- **For hypo:** Determine and address cause; ↓ corresponding dose by 2-4 U or 10-20%.

If not controlled, consider basal-bolus.☒

**Change to premixed insulin\* twice daily**

**Insulinagyp<sup>t</sup> 70/30**

- **Start:** Divide current basal dose into 2/3 AM, 1/3 PM or 1/2 AM, 1/2 PM.
- **Adjust:** ↑ dose by 1-2 U or 10-15% once-twice weekly until SMBG target reached.
- **For hypo:** Determine and address cause; ↓ corresponding dose by 2-4 U or 10-20%.

If not controlled, consider basal-bolus.☒

**Add ≥ 2 rapid insulin\* injections before meals ('basal-bolus'<sup>†</sup>)**

- **Start:** 4U, 0.1 U/kg, or 10% basal dose/meal.☒☒ If A1c<8%, consider ↓ basal by same amount.
- **Adjust:** ↑ dose by 1-2 U or 10-15% once-twice weekly to achieve SMBG target.
- **For hypo:** Determine and address cause; ↓ corresponding dose by 2-4 U or 10-20%.

**Insulinagyp<sup>t</sup> R**

Diabetes Care 2015;38:140-149;  
 Diabetologia 2015;58:429-442

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