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# EVERY ONCE IN A WHILE SCIENCE TAKES ONE GIANT LEAP

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Presenting the all-new

# Esomac MUPS

## (Esomeprazole in MUPS technology)

# Why is it critical to manage the disease appropriately?

1. **Severe detriment to HRQOL – disrupts patients' daily lives in terms of physical, social and emotional well-being**

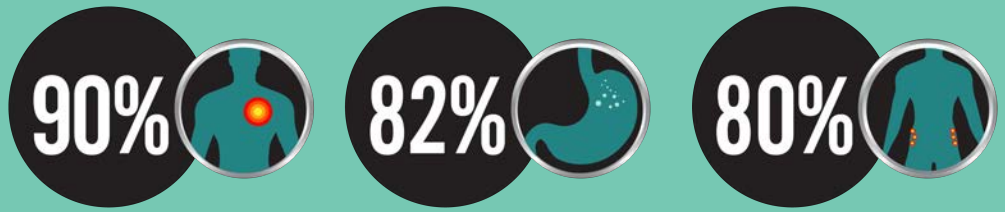
2. **GERD may lead to Barret's Oesophagus which is pre-cursor for Oesophageal cancer.**

# Superior Symptom Control

**80 - 90% Symptom Control[7]**


**- Reduces -**

**Within 4 weeks**




Heartburn by | Acid regurgitation by | Upper abdominal bloating by

**Acid control % of time intragastric pH >4**

**Within 5 days**


Esomeprazole[2] | Pantoprazole[2] | Esomeprazole[2] | Rabeprazole[2]

Reference 2 - Med Sci Monit. 2015;21:4111-21. Reference 3 - Clin Drug Investig. 2008;28(6):333-43. Reference 4 - Aliment Pharmacol Ther. 2012;35(7):810-8.

# Superior Mucosal Healing (Healing Rates at 8 weeks)

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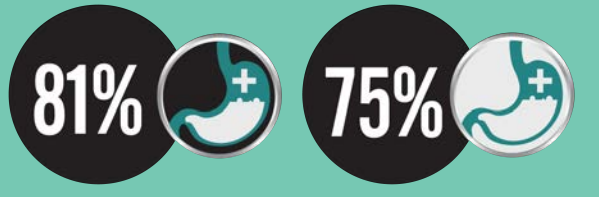
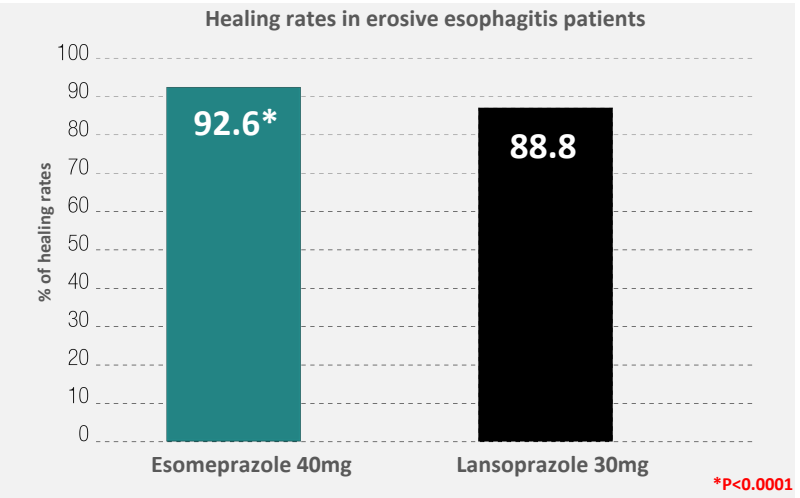
**80-93% Healing Rates of EE[7]**






## HIGHER HEALING RATES IN EROSIVE ESOPHAGITIS[1]

**Healing rates of >90% achieved at week 8 in erosive esophagitis patients[1].**




Reference 7: Ther Clin Risk Manag. 2007; 3(4): 653–663. Reference 8: Castell DO, Kahrilas PJ, Richter JE, et al. Esomeprazole (40 mg) compared with lansoprazole (30 mg) in the treatment of erosive esophagiti. Am J Gastroenterol. 2002;97(31:575-83. Reference 9: Aliment Pharmacol Ther. 2005 ;21(6):739-46.

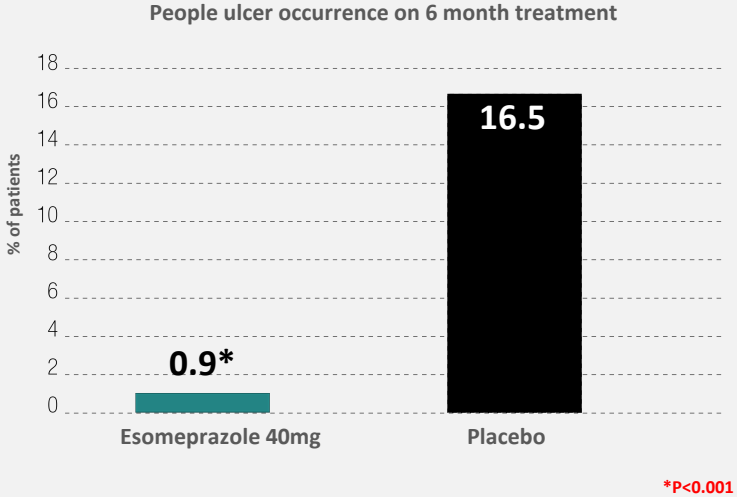
# Superior prevention of NSAID ulceration

prevention of NSAID ulceration[8]

99%

## PREVENT ULCERS IN PATIENTS ON NSAID's[2]

Less than 1% esomeprazole treated developed an ulcer compared to 16.5% with placebo after 6-month treatment.




Reference 10: Scheiman JM, Yeomans ND, Talley NU, et al. Prevention of ulcers by esomeprazole in at-risk patient using non-selective NSAIDs and COX-2 inhibitors. Am./ Gastroenterol. 2006; 101(4):701-10.

# Superior Duration of action: Sustained Freedom from Symptoms

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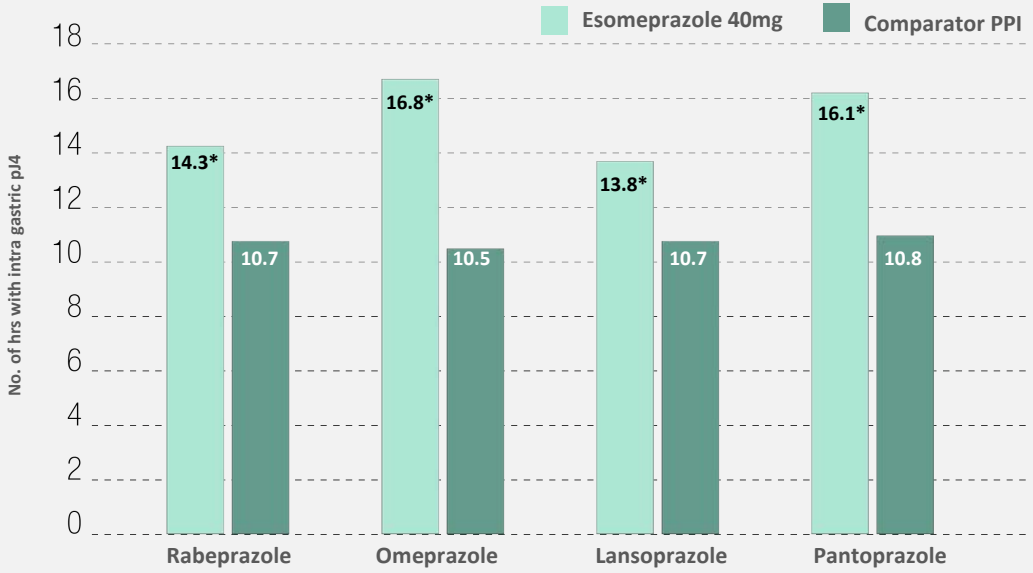
Significantly longer acid suppression with esomeprazole than any other PPI [11]




*P<0.0001 **p>0.001

Reference 11: Rohss K, Lind T, Wilder-Smith C. Esomeprazole 40 mg provides more effective intragastric acid control than lansoprazole 30 mg, omeprazole 20 mg, pantoprazole 40 mg and rabeprazole 20 mg in patient with gastro-oesophageal reflux symptoms. Eurl Clin Pharmacol. 2004;60(8):531-9.


# All in one Daily Dose

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| Indication [1] | Dosage | Frequency |
|---|---|---|
| **Treatment of Gastroesophageal Reflux Disease (GERD)** | | |
| •Healing of Erosive Esophagitis | 20 mg or 40 mg | Once Daily for 4 to 8 Weeks |
| •Maintenance of Healing of Erosive Esophagitis | 20 mg | Once Daily |
| •Symptomatic Gastroesophageal Reflux Disease | 20 mg | Once Daily for 4 Weeks |
| **Prophylaxis of NSAID-Associated Peptic Ulcer Disease (PUD)** | 20 mg or 40 mg | Once Daily for up to 6 months |
| **Treatment of peptic ulcer disease caused by H. pylori (to reduce the risk of Duodenal Ulcer Recurrence)** | 40 mg | Once Daily for 14 Days |

Reference 1: Esomac MUPs Prescription Information

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# TAKE A
# LEAP FOR YOUR PATIENTS WITH
# MUPS TECHNOLOGY

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## What is the MUPs technology?

Multiple Units are composed of coated tablets containing **compacted coated pellets** allowing modified drug release and have identical release profile

This gives them **technological** and **therapeutic advantages** over single-unit dosage forms

# Enteric coated tablets

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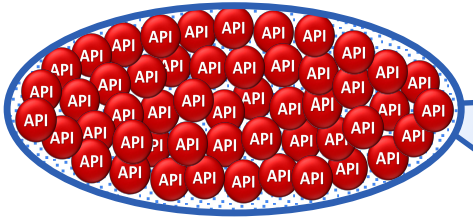



Excipients and Active Pharmaceutical Ingredient are compressed together into a tablet.

A gastric protective coating is applied to the tablet after compression.

The coating is "pitted" and is acted on by gastric acid once swallowed

The coating is broken down and Active Pharmaceutical Ingredient released into gastric acid

Esomeprazole is acid-labile meaning it is destroyed by gastric acid

Systemic bioavailability is thus decreased.

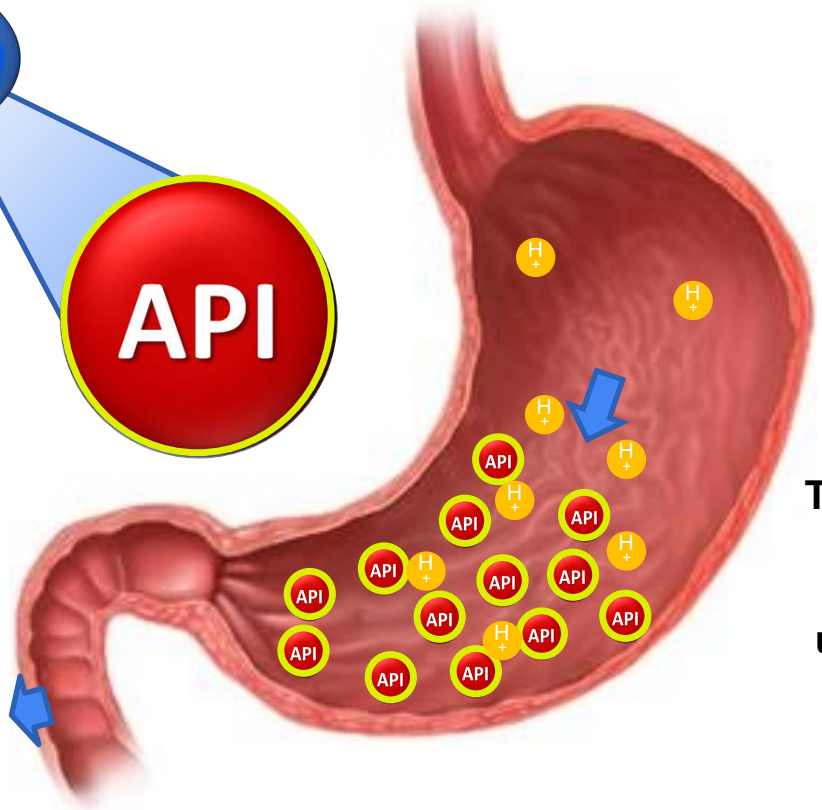
# Why Esomeprazole MUPS are different

Spheres of esomeprazole are coated in a gastro protective coating.

The spheres and excipients are compressed to tablets and coated

This gives a greater surface area to volume ratio of protection.

Thereby maximizing Systemic bioavailability.




When swallowed the tablet coating dissolves releasing the spheres.

The spheres remain protected in the stomach passing unaffected into the duodenum

Only at a duodenal pH >5, does the sphere coating dissolve, releasing the esomeprazole

# Why MUPs technology?

## 1. Greater confidence in Clinical Outcome with Improved Absorption[12,13,14]

Esomac MUPs safe passage to duodenum results into greater systemic bio-availability compared to normal enteric coated tablets which translates to greater confidence in the clinical outcome[12,13].
Differences in bioavailability among formulations of a given drug can have clinical significance[14]

Esomac MUPs uniform drug absorption due to smaller size of pellets also leads to **consistent and controlled pharmacological action[12]**

References:
12. MUPS (Multiple Unit Pellet System) Tablets – A Brief Review. *Das Palash et. al. / JPBMS, 2011, 12 (02)*
13. https://ijpsr.com/bft-article/a-review-of-pellets-and-pelletization-process-a-multiparticulate-drug-delivery-system/?view=fulltext
14. https://www.msdmanuals.com/professional/clinical-pharmacology/pharmacokinetics/drug-bioavailability#:~:text=Bioavailability%20refers%20to%20the%20extent,on%20its%20design%20and%20manufacture.
15. Peck GE, Baley GJ, McCurdy VE and Banker GS: Tablet Formulation Design. In: Schwartz, B.J. (ed.) Pharmaceutical Dosage Forms: Tablets. Marcel Decker, New York, 1989: 75-130.

# Why MUPs technology?

## 2. Lesser dependence on state of nutrition [13]

Esomac MUPs has protective outer polymer layer that protects esomeprazole to ensure safe passage through the stomach (Esomeprazole is acid-labile meaning it is destroyed by gastric acid)

With this protection, dependence on state of nutrition is reduced significantly.

References:
13. https://ijpsr.com/bft-article/a-review-of-pellets-and-pelletization-process-a-multiparticulate-drug-delivery-system/?view=fulltext

# Why MUPs technology?

## 3. Increased Safety Profile [12, 13, 15]

The safety and efficacy of the pelletized formulation is higher than that of other dosage forms. The pellets reduce peak plasma fluctuations and minimize potential side effects with improved drug bioavailability[15]

With MUPS there's lesser risk of dose dumping (in stomach) and incomplete drug release[12]

With MUPS lesser risk of local irritation of the gastro mucosa as the pellets are uniformly released [12,13]

## 4. Better patient compliance[12]

With MUPs there's lesser tendency of adhering to esophagus during swallowing[12] due to the smaller volume and size of tablets that translates to better patient compliance[12].

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12. MUPS (Multiple Unit Pellet System) Tablets – A Brief Review. *Das Palash et. al. / JPBMS, 2011, 12 (02)*
13. https://ijpsr.com/bft-article/a-review-of-pellets-and-pelletization-process-a-multiparticulate-drug-delivery-system/?view=fulltext
14. https://www.msdmanuals.com/professional/clinical-pharmacology/pharmacokinetics/drug-bioavailability#:~:text=Bioavailability%20refers%20to%20the%20extent,on%20its%20design%20and%20manufacture.
15. Peck GE, Baley GJ, McCurdy VE and Banker GS: Tablet Formulation Design. In: Schwartz, B.J. (ed.) Pharmaceutical Dosage Forms: Tablets. Marcel Decker, New York, 1989: 75-130.

# THE ALL-NEW ESOMAC MUPS.

## A REVOLUTION IN INTRAGASTRIC PH MANAGEMENT

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# CELEBRATING 88 YEARS

88 YEARS OF DELIVERING HIGH-QUALITY, AFFORDABLE MEDICATION TRUSTED BY PATIENTS AND HEALTHCARE PROFESSIONALS GLOBALLY.

*To many more years of "Caring for Life"*

# Thank you

# References


1. Esomac MUPs prescription information
2. Med Sci Monit. 2015;21:4111-21.
3. Clin Drug Investig. 2008;28(6):333-43.
4. Aliment Pharmacol Ther. 2012;35(7):810-8.
5. Aliment Pharmacol Ther 2003; 17 (Suppl. 1): 5-9
6. Clin Drug Investig 2009; 29: 803-810
7. Ther Clin Risk Manag. 2007; 3(4): 653–663.
8. Castell DO, Kahrilas PJ, Richter JE, et al. Esomeprazole (40 mg) compared with lansoprazole (30 mg) in the treatment of erosive esophagitis. Am J Gastroenterol. 2002;97(31:575-83
9. Aliment Pharmacol Ther. 2005 ;21(6):739-46.
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11. Rohss K, Lind T, Wilder-Smith C. Esomeprazole 40 mg provides more effective intragastric acid control than lansoprazole 30 mg, omeprazole 20 mg, pantoprazole 40 mg and rabeprazole 20 mg in patient with gastro-oesophageal reflux symptoms. Eurl Clin PharmacoL 2004;60(8):531-9.
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15. Peck GE, Baley GJ, McCurdy VE and Banker GS: Tablet Formulation Design. In: Schwartz, B.J. (ed.) Pharmaceutical Dosage Forms: Tablets. Marcel Decker, New York, 1989: 75-130.