Glymbaxi: A New Drug Designed to Assist Type 2 Diabetes Patients with Glycemic Control

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Recommended Citation
Holderfield, Samantha J., "Glymbaxi: A New Drug Designed to Assist Type 2 Diabetes Patients with Glycemic Control" (2015). Natural Sciences Poster Sessions. 79.
https://spark.parkland.edu/nsps/79

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A Randomized, Open-Label, Crossover Study to Evaluate the Pharmacokinetics of Empagliflozin and Linagliptin After Coadministration in Healthy Male Volunteers

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CHEM 205

Glyxambi
(EMPAagliSFOZIN/INGALGIPTIN) TABLETS

- First drug companies to design a drug that combined the mechanisms of SGLT2 and DPP-4 inhibitors to improve glycemic control (6)
- Just recently approved by the FDA
- Has not yet been studied in patients with a history of pancreatitis (6)
- Empagliflozin predominant transporter that’s responsible for reabsorption of glucose from the glomerular filtrate back to circulation (2)
- Linagliptin inhibits DPP-4 an enzyme that degrades incretin hormones and increases the concentrations of active incretin hormones and stimulates the release of insulin (2)
- Incretin hormones are involved in the regulation of glucose homeostasis, they are secreted at low levels throughout the day and rise immediately after meals (2)

Conclusion:
Glyxambi is a single agent from empagliflozin and linagliptin, a new drug designed to assist type 2 diabetes patients with glycemic control.

- 16 male volunteer test subjects
- Randomized multiple dose crossover
- Treatment A empagliflozin 50 mg - 5 days
- Treatment B empagliflozin 50 mg and linagliptin 5 mg - 7 days
- Treatment C linagliptin 5 mg - 7 days
- Treatments done in sequence AB then C or C then AB
- Subjects did not see very many adverse side effects (3)
- Conclusion: co-administration had an effect on glycemic control
- Results were in the norm for previous clinical trials (3)

Scientists used an acid 1,2-chloroiodohexanionic acid and replaced the alcohol group using (COCl)2 in DMF then a Friedel Crafts reaction was performed to add a fluorine phenyl group to the carbonyl. Aromatic substitution was performed using (S)-3-hydroxytetrahydorufuran and BuOK in THF (7).