A new drug belonging to a novel class of drugs for type 2 diabetes

NEW(S)

Food and Drug Administration (FDA) approves Johnson and Johnson's first-in-class sodium-glucose cotransporter 2 (SGLT 2) inhibitor, Invokana for type 2 diabetes[1]

(RE)VIEWS

The FDA approval of canagliflozin (Invokana) was based on data involving over 10,285 type 2 diabetes patients, which showed improvement in hemoglobin A1c and fasting plasma glucose levels. Canagliflozin has been tested as monotherapy as well as in combination with metformin, sulphonylurea, pioglitazone, and insulin.[1]

A protein called SGLT 2 (expressed almost exclusively in the proximal tubule and accounts for >90% of renal glucose reabsorption) plays a significant role in the kidneys, which is responsible for most renal glucose reabsorption in people with type 2 diabetes mellitus. Retention of excess glucose by this pathway contributes to persistent hyperglycemia and over time glucotoxicity that is deleterious to beta-cell function.

The SGLT2 receptor inhibitors are a new class of glucose-lowering agents. It is now known that suppressing the activity of SGLT2 in the body inhibits renal glucose reabsorption, thereby increasing the excretion of excess glucose from the body and assisting in the reduction of hyperglycemia. SGLT2 inhibitors do not stimulate insulin secretion and therefore are expected to be associated with a low risk for hypoglycemia. In addition, there is the potential for clinically significant weight loss, and as mentioned above, reduced hepatic glucose production, and amelioration of glucotoxicity.[2]

Since there are existing drugs, which are inexpensive and with a long safety record, it is unlikely that SGLT2 inhibitors would be used first line in type 2 diabetes.[3]

Improved glycemic control with a low risk of hypoglycemia, concomitant weight loss and the potential of lowering of blood pressure make SGLT2 inhibition an attractive approach. Many SGLT2 inhibitors (dapagliflozin, remogliflozin*)* are undergoing Phase III clinical trials and more are in Phase I and II clinical trials.[4]

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REFERENCES

1. Available from: http://www.firstwordpharma.com/node/1068948. [Last accessed on 2013 Apr 24].
2. List JF, Woo V, Morales E, Tang W, Fiedorek FT. Sodium-glucose cotransport inhibition with dapagliflozin in type 2 diabetes. Diabetes Care 2009;32:650-7.
3. Clar C, Gill JA, Court R, Waugh N. Systematic review of SGLT2 receptor inhibitors in dual or triple therapy in type 2 diabetes. BMJ Open 2012;2(5). pii: e001007. doi: 10.1136/bmjopen-2012-001007.
4. Paisley AJ, Yadav R, Younis N, Rao-Balakrishna P, Soran H. Dapagliflozin: A review on efficacy, clinical effectiveness and safety. Expert Opin Investig Drugs 2013;22:131-40.

Access this article online	
Quick Response Code:	Website: www.jpharmacol.com
	DOI: 10.4103/0976-500X.114621

How to cite this article: ???
Source of Support: Nil, **Conflict of Interest:** None declared.