

EDITORIAL

Insulin Degludec / Insulin Aspart: A Novel Co-formulation for Insulin Intensification

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Diabetes management is undergoing a paradigm shift in treatment approach that is more “patient-centred” - emphasizing the importance of individualization of treatment. Recommendations are replacing guidelines keeping patient as a shared decision maker. Insulin therapy is the cornerstone of treatment for type 2 diabetes mellitus (T2DM). Once patients are initiated on basal insulin therapy, at some point, mere increasing basal insulin dose will not be enough to maintain desired glycaemic control, eventually requiring treatment intensification. However, despite documented evidence supporting timely intensification of insulin, considerable clinical inertia exists in mealtime insulin intensification. Patients and physicians are reluctant to intensify insulin therapy owing to concerns about multiple daily injections (MDI), weight gain, hypoglycaemia and changes in lifestyle.

Intensification of insulin therapy using patient-tailored and customized regimens is essential for effective management of diabetes. Several guidelines also recommend insulin intensification when optimal glycaemic control could not be achieved with initial basal or premixed insulin therapy. Ideally, patients initiated on basal insulin may be intensified to either basal+ one rapid-acting insulin therapy/ glucagon-like peptide-1 receptor agonists (GLP-1 RA) therapy or premixed insulin therapy, while those initiated on premixed insulin may be further intensified to basal + \geq two rapid-acting insulin injections. Basal

plus is the option which now is being increasingly challenged by premix regimens in Asian countries like India and China. However, premixed insulins (a fixed combination of intermediate insulin with regular- or rapid-acting insulin) are limited by their relative inflexibility in dosing (failure to titrate the shorter from the longer acting component), requiring resuspension before injection, less than 24h duration of action of the basal component and adherence to a consistent meal schedule to avoid the risk of hypoglycaemia. Similarly the use of long-acting and meal time insulins, separately as part of basal-bolus therapy requires MDI and adds to the burden of treatment complexity. Therefore, an ideal insulin regimen that can provide both basal and prandial insulin coverage with complementary pharmacokinetic/ pharmacodynamic (PK/PD) profile in a single injection can address the main barriers to timely insulin intensification in patients with diabetes while achieving or maintaining individual glycaemic targets over time.

This supplement provides information on insulin degludec/aspart (IDegAsp), a first soluble co-formulation of two different insulin analogues; insulin degludec (IDeg: 70%) and insulin aspart (IAsp: 30%). The first article summarises the challenges of meal-time insulin intensification in T2DM patients

poorly controlled on basal insulin regimens. It is noted that majority of patients are reluctant to intensify insulin therapy due to regimen complexity, increased burden of MDI, and fear of hypoglycaemia. In this context, the authors highlight the need for a simpler, alternative intensification option taking into account the individual patient considerations to achieve and maintain the glycaemic targets. The second article reviews the PK and PD aspects of IDegAsp. The article enumerates the reasons why a true combination of a rapid-acting and long-acting insulin analogue was not possible in the past and how the unique structural properties of two separate analogues, IDeg and IAsp make this combination possible. The unique structure of IDeg, which is not shared by glargine or detemir, allows it to be co-formulated with IAsp without compromising their individual PK/PD profiles. The PD of IDegAsp closely mimics the physiological insulin secretion (than biphasic formulations) with a distinct peak action of IAsp for a given meal and a flat and stable basal action of IDeg. The authors conclude that advantage of distinct basal and prandial PD profiles of IDeg and IAsp components in single injection could translate into better glycaemic control with lower risk of hypoglycaemia not only in young but also elderly patients with diabetes.

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In the last article, data from the BOOST clinical trial program on efficacy and safety of IDegAsp over premixed and basal-bolus insulin regimen from phase 3a and 3b trials, respectively is discussed. Insulin intensification with IDegAsp in patients with T2DM was shown to achieve glycaemic control without an undue increase in hypoglycaemia compared with

BIAsp 30, in both global and Asian cohorts. The article summarizes the clinical applicability of IDegAsp in patients with type 1 and type 2 diabetes mellitus.

Current Insulin therapy starts with basal and then graduates to basal plus and basal bolus treatment options. This novel coformulation offers an unique option for basal plus therapy of

Insulin but needs validation with evidence base. In summary, it is anticipated that this supplement will give readers an in-depth knowledge on currently available evidence related to this novel coformulation and explore its future potential in the management of diabetes. We encourage to generate more evidence base on such novel formulations in the Indian context