Drugs 1999 May; 57 (5): 766-767
0012-6667/99/0005-0766/$02.00/0

Insulin Aspart
A Viewpoint by Philip Home

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Rapid-acting insulin analogues, when injected subcutaneously, restore a physiological meal-time serum insulin profile to people with diabetes, in contrast to human insulin. The pharmacokinetic and pharmacodynamic studies of insulin aspart appear conclusive in confirming these properties. Data on insulin and IGF-I receptor interactions, together with toxicology and adverse event profiles from phase 3 licensing studies,[1] raise no special concerns over clinical use. While the recommendation that rapid-acting analogues are given immediately before meals is welcome, in practice most people using human insulin do this anyway, for reasons of safety and convenience, so that advantage is largely theoretical.

Another potential advantage of rapid-acting analogues is better blood glucose control. The studies of insulin aspart already confirm its success in ameliorating post-prandial hyperglycaemia, but whether post-prandial hyperglycaemia is a microvascular (and arterial) risk factor is unproven, and possibly unprovable. The limited published studies on insulin aspart, and the more extensive studies on insulin lispro, have yet to show overall improvement in blood glucose control (as measured by circulating glycated proteins), except where basal (between meal and at night) insulin delivery is optimally replaced by infused insulin.[2] This probably reflects the prolonged pharmacodynamic profile of human insulin, which therefore contributes to blood glucose control in the large post-prandial period and early part of the night, unlike insulin analogues. Rapid-acting insulin analogues may begin to show improved overall blood glucose control as clinicians learn to use them together with more extended-action (basal) insulin, or with better basal insulins (possibly insulin glargine[3]) than the current NPH insulin.

Importantly, however, a reduction of hypoglycaemia incidence at the same level of glucose control is already apparent for insulin aspart, an advantage over human insulin that will be welcomed by many people with diabetes. ▲

References

1. Data on file, Novo Nordisk A/S, with permission
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