

Ultralente-based insulin regimens in insulin-dependent diabetics

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Insulin Update 1982 157-174

Insulin therapy has to provide for two separate requirements, the basal insulin supply and brief peaks for meals. The prolonged action of daily subcutaneous injections of beef ultralente insulin provides a source for the basal, steady-state insulin supply. Additional injections of soluble insulin can be used to cover meals.

The complete distinction between basal and meal insulin requirements allows simple rules to guide both the physician and the patient. The required ultralente dosage needs to be continued daily, irrespective of illness or missed meals. During surgery, the continued basal insulin supply facilitates control of diabetes. The dosages of soluble insulin can be adjusted to cover meals. The subcutaneous soluble insulin has a longer action than the physiological meal insulin response, so that if lunch is taken within four to five hours of breakfast, it usually can be covered by the prebreakfast insulin injection. In this way, only two rather than three daily soluble insulin injections are required.

The doses of ultralente and soluble (regular) insulin needed for different severities of diabetes and degrees of insulin resistance can be predicted. When starting ultralente insulin therapy, a loading dose of three or four times the expected dose is appropriate in view of the long-time course of absorption. Newly diagnosed insulin-dependent diabetics at first need full insulin replacement, and a simple regimen has been utilized for reducing appropriately the basal and meal insulin requirements as the beta cell recover. While transfer of patients from a medium-acting insulin to ultralente insulin often improves nocturnal blood glucose control, strict blood glucose control during the day is not possible in view of the inappropriately long action of subcutaneous soluble insulin to cover a single meal, and the reluctance of many patients to perform repeated home blood glucose tests to check control. In a group of unselected diabetic patients with no endogenous insulin supply, it is difficult to maintain a mean glycosylated hemoglobin level of less than 9.5% (normal range 5.8% to 8.5%).

Purified monocomponent beef ultralente insulin is antigenic, and antibody formation can lead to a need for increasing doses. Human ultralente insulin might be advantageous.