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Human growth hormone: New delivery systems, alternative routes of administration, and their pharmacological relevance.

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Abstract

The availability of recombinant human growth hormone (GH) has broadened its range of clinical applications. Approved indications for GH therapy include treatment of growth hormone deficiency (in children and in adults), Turner syndrome, Prader-Willi syndrome, chronic renal insufficiency and more recently, idiopathic short stature in children, AIDS-related wasting and fat accumulation associated with lipodystrophy in adults. Therapy with GH usually begins at a low dose and is gradually titrated to obtain optimal efficacy while minimizing side effects. It is usually administered on a daily basis by subcutaneous injection, since this was considered to impact upon patient compliance, extended-release GH preparations were developed and new delivery platforms - e.g., auto-injectors and needle-free devices - were introduced in order to improve not only compliance and convenience but also dosing accuracy. In addition, alternative less invasive modes of administration such as the nasal, pulmonary and transdermal routes have also been investigated. Here, we provide an overview of the different technologies and routes of GH administration and discuss the principles, limitations and pharmacological profiles for each approach.

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