

Introduction

The isolation and purification of somatostatin (somatotropin release-inhibiting factor [SRIF]), just over 30 yr ago, has led to the elucidation of protean physiologic actions of SRIF and the subsequent recognition of several unique clinical applications of this hormone. This cyclic peptide is secreted from the hypothalamus in several different forms, which possess biologic activity and have some degree of functional specificity. SRIF inhibits hormone release from the anterior pituitary (growth hormone and thyroid-stimulating hormone), the pancreas (insulin and glucagon), and the gastrointestinal (GI) tract (neuroenteric peptides). GI motility, absorption, and splanchnic blood flow are also suppressed.

The inhibitory actions of SRIF are being applied in several clinical scenarios including suppression of tumoral hormone hypersecretion (acromegaly, neuroendocrine tumors, pancreatic tumors, carcinoid tumors), GI bleeding, dumping syndrome, and pancreatitis. SRIF analogs bind to specific SRIF receptors on the tumor surface, and this has been exploited to develop receptor-subtype therapeutic analogs, as well as diagnostic imaging scans.

Recently, five different SRIF receptor subtypes (SSTR1–5), encoded by genes on different chromosomes, have been

recognized. These receptor subtypes are expressed in distinct tissues and bind with varying affinity to the different SRIF analogs, which provides the opportunity for development of receptor-subtype-specific analogs with unique functional and therapeutic specificity.

This special issue reviews the established diagnostic and therapeutic efficacy of SRIF analogs in several challenging neuroendocrine disorders as well as potential novel indications for these analogs. The development of SRIF receptor-selective agents will broaden future therapeutic and diagnostic opportunities for patients harboring these disorders.

Vivien Bonert, MD

Associate Professor of Medicine, UCLA School of Medicine,
The Pituitary Center, CSMC

Shlomo Melmed, MD

Senior Vice President, Academic Affairs
Director, Burns and Allen Research Institute
Associate Dean, UCLA School of Medicine