

# HISTOLOGICAL LOCALISATION OF INSULIN-LIKE GROWTH FACTOR I AND II (IGFI/II) AND GROWTH HORMONE (GH) RECEPTORS IN THE TIP OF THE ANTLER.

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The vigorous nature of Cervid antler growth generates interest in its growth mechanisms. The aim of this experiment was to measure the available binding of IGFI, IGFI and GH to antler sections and determine the type of receptor to which the ligand was binding.

Cryosections from 60 day old antler tips were incubated with  $^{125}\text{I}$ -oIGFI or  $^{125}\text{I}$ -oIGFII, with or without competing IGFI (1 $\mu\text{g/ml}$ ), IGFI (1 $\mu\text{g/ml}$ ) or insulin (10 $\mu\text{g/ml}$ ), and  $^{125}\text{I}$ -oGH with or without unlabelled GH (1 $\mu\text{g/ml}$ ) or prolactin (1 $\mu\text{g/ml}$ ). Sections were fixed, exposed against X-ray film, then exposed under photosensitive emulsion. From autoradiographical grain counts the contribution of type 1, type 2 and insulin receptors to binding were calculated by differences between estimates of specific binding.

The highest specific binding for IGFI was found in the epidermis and cartilaginous layer but all regions showed significant binding (Table 1). Counts from the IGFI incubations differentiated between type 2 receptors and non-receptor binding with the perichondrium and epidermis showing the highest specific binding for IGFI (Table 2). Most of the binding by IGFI in the antler was to type 2 receptors. There were insulin receptors in the epidermis and reserve mesenchyme and type 1 receptors in the integument layer and cartilage. Specific binding of GH was not demonstrated.

TABLE 1: Specific grain counts from IGFI incubation.

TISSUE:	E	I	R	P	C	SED
type 1	1	8	-	5	13	2.2
type 2 + non-receptor	38	15	14	15	23	2.2
insulin	12	1	4	1	-	2.2

TABLE 2: Specific grain counts from IGFI incubation.

TISSUE:	E	I	R	P	C	SED
type 2	10	16	16	24	15	2.2
non-receptor	7	-	2	-	2	2.2

E=epidermis; I=integument layer; R=reserve mesenchyme; P=perichondrium; C=cartilage

The presence of the type 1, type 2 and insulin receptors indicates that antler tissues are responsive to IGFI and IGFI but not GH. The abundance of type 2 receptors suggests that IGFI may have an important role in antler growth.