

Estrogen Receptors in Normal and Myomatous Human Uteri

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It is well established that estrogens have a more profound trophic effect on myomas than on the neighboring myometrium. One reason for this difference could be that myomatous tissue contains more estrogen receptors, through which estradiol exerts most if not all of its effects (1). In the present study this hypothesis was examined by comparing the amount of receptors in myomas and myometrial tissue originating from different sites of human uteri.

Small pieces of tissue were homogenized in a homogenization buffer (10 mM Tris; 1.5 mM EDTA; 0.02% NaN₃, pH 7.4) immediately after hysterectomy and incubated in the presence of 16 nM (³H)-estradiol at 4 °C before aliquots of 200 µl were removed after 3–4 h. The receptors were precipitated with protamine sulfate (555 µg/ml), collected by centrifugation (5 min, 1,875 g), washed three times with homogenization buffer containing 100 µg protamine sulfate and 5 µl Triton X-100/ml and brought onto GF/C filters (Whatman) in 1 ml of homogenization buffer supplemented with 100 µg protamine sulfate. Tubes and filters were washed with 1 ml of the same buffer, the filters were dried and analyzed for the amount of radioactivity incorporated. Each assay was performed in triplicate. Parallel incubations containing 1.6 µM diethylstilbestrol beside the labeled hormone were performed in order to estimate the amount of unspecific binding sites present in the homogenates (2). The assay system measured the total amount of free receptors, as ascertained by Scatchard analysis (3).

Tissue from 5 patients was analyzed as shown in table I. Equal amounts of receptors were found in myomatous and myometrial tissue from different regions of the uterus. The results compare well with those obtained in the

Table 1. (³H)-estradiol (pmol/g) bound to free estradiol receptors present in different tissues of the uterus

Patient	Age	Phase of cycle	Myometrium		Myoma	Endometrium
			fundus	isthmus		
D.M.	46	early proliferative	2.1	2.4	2.0	13.4
S.R.	51	early secretory	2.5	2.5	1.8	7.0
R.D.	47	middle secretory	2.8	2.2	1.9	5.8
M.R.	46	late secretory	1.8	1.1	1.6	2.3
W.G.	51	postmenopause	1.6	1.4	2.7	12.0
		Mean	2.2	1.9	2.0	8.1
		SD	0.5	0.6	0.4	4.4

myometrium of normal uteri, i.e. 1.9 ± 0.4 pmol/g ($n = 4$). In contrast, the number of receptors present in the endometrium was significantly greater than that in the myometrium indicating that clear-cut differences can be detected in small samples. It is, therefore, concluded that more subtle variations rather than gross differences between the number of receptors are responsible for the increased sensitivity of myomatous tissue to estradiol (4).

References

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