



More than a  
pregnancy hormone

**ELISA for the determination of Relaxin in serum, plasma,  
urine, seminal plasma and tissue**

## Indications

- ▶ Heart failure
- ▶ Reproduction medicine
- ▶ Regulation of body fluid and circulation homeostasis /  
microcirculation
- ▶ Angiogenesis
- ▶ Immunomodulation



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# Relaxin

The peptide hormone relaxin originally was found to have its main effects in the field of **reproduction** and **fertility**. It was found to promote growth of the mammary gland, to inhibit uterine contractile activity, and to dilate and soften the cervix uteri. Meanwhile it has shown astonishing **pleiotropy** e.g., by having vasodilator effects, by binding in rat brain or by inducing pituitary secretion of vasopressin.

## Circulatory and renal effects

Relaxin has a potent vasodilatory action on renal arteries and is in fact essential for **renal vasodilation** during pregnancy. However, it does not appear to dilate all arteries. What is known is that relaxin is produced in **heart failure**.

In animal studies relaxin was demonstrated to function as a strong **chronotropic** and **inotropic** agent in normotensive as well as in spontaneously hypertensive rats. The mechanisms, lead to the increase in heart frequency and promote contractions of the heartmuscles, are still unclear. These effects were, however, stronger in comparison to angiotensin II and it is assumed that this effect is mediated via specific receptors in the heart.

Hocher et al. (2004) found relaxin as an independent risk factor predicting death in male patients with end stage kidney disease on chronic hemodialysis.

## Relaxin receptors

The binding of **relaxin** to specific receptors has been observed in the brain, uterus and the heart, which indicates the multifunctionality of this hormone. Recently, two G protein-coupled receptors, LGR7 and LGR8, have been identified as relaxin receptors. It has been demonstrated that relaxin acts as an glucocorticoid receptor agonist (Dschiertzig et al. 2004).

## Effects on connective tissue

Relaxin-1 is well known for its actions on collagen remodelling. It inhibits collagen production by

- inhibiting the proliferation of fibroblasts,
- inhibiting the differentiation/activation of fibroblasts,
- inhibiting collagen synthesis and –deposition,
- stimulating MMP induced collagen degradation.

Because of its influence on collagen production relaxin may have therapeutic potential in diseases characterized by fibrosis like congestive heart failure, chronic renal failure, pulmonary diseases or scleroderma.

## Cross reactivity

No cross reactivity was observed with:

- Insulin
- Zinc Insulin
- Prolactin
- Inhibin
- Prorelaxin
- Porcine relaxin

## Literature

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- Dschiertzig TB et al. (2003) Relaxin, a pregnancy hormone, is a functional endothelin-1 antagonist: attenuation of endothelin-1-mediated vasoconstriction by stimulation of endothelin type-B receptor expression via ERK-1/2 and nuclear factor-kappaB. Circ Res. 92:32–40.
- Jeyabalan A et al. (2003) Essential role for vascular gelatinase activity in relaxin-induced renal vasodilation, hyperfiltration, and reduced myogenic reactivity of small arteries. Circ Res. 93:1249–57.
- Dschiertzig TB, . . . , Armbruster FP et al. (2001) The pregnancy hormone relaxin is a player in human heart failure. FASEB J. 15:2187–95.
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## Relaxin ELISA:

- Detection limit of approx. 1.2 pg/ml (Armbruster FP et al. , 2001)
- Measurement in serum/plasma also possible in non-pregnant status and in men
- Determinations can be made using various sample material (serum, plasma, urine, tissue extracts and cell culture supernatants)

Relaxin	
Matrix	Serum, Plasma, Urine, Tissue, Seminal Plasma
Sample volume	100 µL
Test principle	ELISA
Cat. No.	K 9210