

Determination of human and mouse insulin in the same sample

By combining Merckodia's Human Insulin ELISA and Mouse Insulin ELISA specific determinations of insulin from each species in the same sample can be achieved.

Determination of human insulin in the sample

Analyze the samples in the Merckodia Insulin ELISA (10-1113-01) according to the Directions for Use. The Merckodia Human Insulin ELISA is specific for human insulin and does not cross-react with mouse insulin (< 0.3 %). Hence, obtained results from the Human Insulin ELISA is equal to the actual level of human insulin in the sample.

Determination of Mouse insulin in the sample

Analyze the same samples in the Merckodia Mouse Insulin ELISA (10-1247-01) according to the Directions for Use. Obtained result of insulin in the Mouse Insulin ELISA does not give the level of mouse insulin in the sample directly, as human insulin has a 195 % cross reactivity in the Mouse Insulin ELISA.

Calculations for specific determination

Start by converting the results to the same unit by using the conversions factors stated below.

Human Insulin ELISA 1mU/L = 6 pmol/L.
Mouse Insulin ELISA 1 µg/L = 174 pmol/L.

The obtained result of insulin in the Mouse Insulin ELISA is the sum of human and mouse insulin. To determine the level of mouse insulin in the sample the cross-reactivity to human insulin must be considered. Therefore, the determined level of human insulin must be multiplied by 1.95 and subsequently subtracted from the results given by the Mouse Insulin ELISA.

Example

A sample is analyzed in both the Human Insulin ELISA and the Mouse Insulin ELISA. The obtained concentration in each assay is the following:

- Human insulin ELISA 15 mU/L
- Mouse insulin ELISA 263 pmol/L

The level of human insulin in the sample is 15 mU/L which equals 90 pmol/L (1 mU/L = 6 pmol/L).

The level of mouse insulin in the sample is then calculated as follows:

$$263 \text{ pmol/L} - 90 \text{ pmol/L} \times 1.95 = 88 \text{ pmol/L}$$