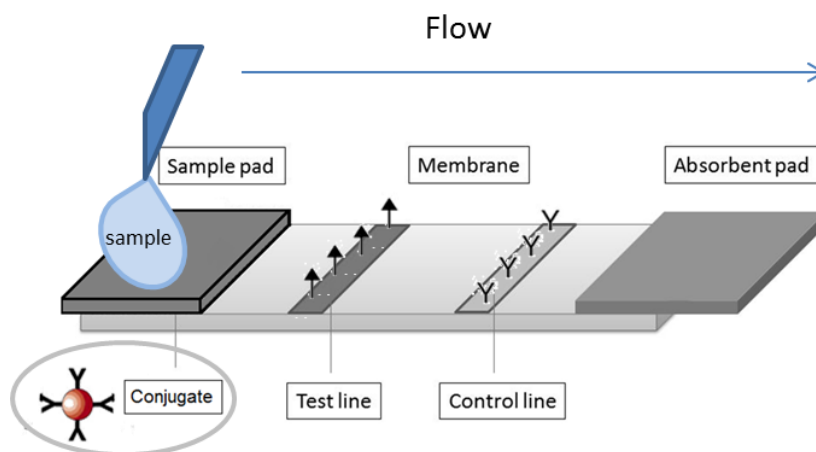


Development of a lateral flow assay for the determination of soy proteins in food samples

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The development of a new lateral flow assay for allergen detection, more specifically, soy proteins, in food samples using gold nanoparticles (AuNPs) conjugated with anti-soy protein antibodies. The lateral flow assay has been designed under a competitive assay format onto backed nitrocellulose membranes as the main component, and glass and cellulose fibres, as the material for secondary components, such as the sample pad and the absorbent pad. The soy standard and the anti-rabbit IgG antibodies were immobilized onto the nitrocellulose membrane, which had been previously blocked with bovine serum albumin to minimize non-specific interactions. The soy standard is immobilized to give rise to the test line, whereas anti-rabbit IgG antibodies constitute the control line, which is useful to check that the lateral flow test is working correctly. The conjugate is prepared by passive coating of AuNPs with anti-soy protein IgG and immobilized at the beginning of the membrane, immediately below the sample pad. When the sample is added, the liquid flows from the sample pad to the area where the conjugate is and, then it flows until the absorbent pad, interacting thus with the components of the test and control lines to produce the final result. The residues are stored onto the absorbent pad, which ensures the flow through the membrane. A scheme of the lateral flow assay developed is shown below:



Once the lateral flow assay is prepared, it can be stored for further use at 4 °C. This assay can detect the presence of soy proteins at concentrations equal to or higher than 1.75 µg/ml without losing response at high concentrations. The practical usefulness of the developed lateral flow assay has been confirmed by the results obtained after the analysis of samples containing soy, and also, from a cow milk sample.