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Development of a dry reagent assay for glucose.

Determination of the presence of glucose qualitatively in urine is important for the management of diabetic patients. Dry reagent assays for this is commercially available. These assays utilize orthotolidine as the oxidizing agent with produces a blue colour in the presence of hydrogen peroxide and peroxidase. The disadvantages of this method are that orthotolidine

is a carcinogenic substance and its use is restricted. In commercial test strips colour development take place spontaneously when the wet reagent strip is exposed to air.

Assay strips were prepared by coating on plastic strips and whatman filter paper strips. A reagent mixture containing 4 methoxy 1-naphthol, 5-5 dimethyl –1-3-cyclohexandione, triton X-100, glucose oxidase, peroxidase in phosphate buffer pH 6 with a gelatin base.

It was observed that when the reagent mixture was coated on plastic strips. A blue colour developed on 22% of the strips on storage. This was not observed in paper strips. No colour was observed when wetted and exposed to air in the absence of glucose. After 6 months of storage colour development was observed in paper strips from 10 µmol /mL to 5 µmol /mL when exposed for 1minute and at a concentration up to 1 µmol /mL when exposed to 5 minutes. Under similar condition on plastic strips. Colour development was observed from 10 µmol /mL to 3.3 µmol /mL when exposed up to 5 minutes. No colour development was observed in either type up to concentrations of 20 µmol /mL of fructose and galactose.