

P66. DUAL PURPOSE REAGENTS FOR DIAGNOSIS OF AMINO ACID DISORDERS

Serkan GÜRBÜZ, Melek EROL*

Chemistry Institute, TUBITAK Marmara Research Center, Gebze, Kocaeli, TÜRKİYE

*melek.erol@tubitak.gov.tr

We report on the selectivity of several amino acid sensitive molecules towards different amino acids, especially the ones present in latent fingerprints. Fluorescence and color formation of six different amino acid reactive reagents (genipin, ninhydrin, lawsone, 5-hydroxy-1,4-naphthoquinone (juglone), 2-methoxy-1,4-naphthoquinone and 1,2-naphthoquinone-4-sulfonate) when reacted with L-alanine, L-glycine, L-cysteine, L-histidine, L-serine and L-aspartic acid on filter paper as a function of amino acid concentration, temperature and reaction time were studied. Fluorescence spectra were collected at excitation wavelengths of 505-590 nm.

Orange or purple color formation was observed for all samples when the active reagent treated amino acid spots (10 mM) heated at 150 °C for 1 hour. While intense color and fluorescence was observed with all dual purpose reagents towards L-histidine, juglone formed a non-fluorescent blue color with L-cysteine under these conditions. Increasing the heating time usually increased the color contrast, but it decreased the fluorescence of the spots.

The fluorescent character was decreased in the following order: genipin > juglone > 2-methoxy-1,4-naphthoquinone > lawsone > 1,2-naphthoquinone-4-sulfonate > ninhydrin when the amino acid spots were heated at 150 °C for 1 hour after treatment with 1 mM active reagents. Fluorescence of real fingerprints developed on paper surfaces using different active reagents was also compared.

Results reported here would play an important role in the detection and diagnosis of amino acid disorders such as phenylketonuria in the presence of abnormal amount of specific amino acids in the fingerprint secretions, blood or other body fluids.