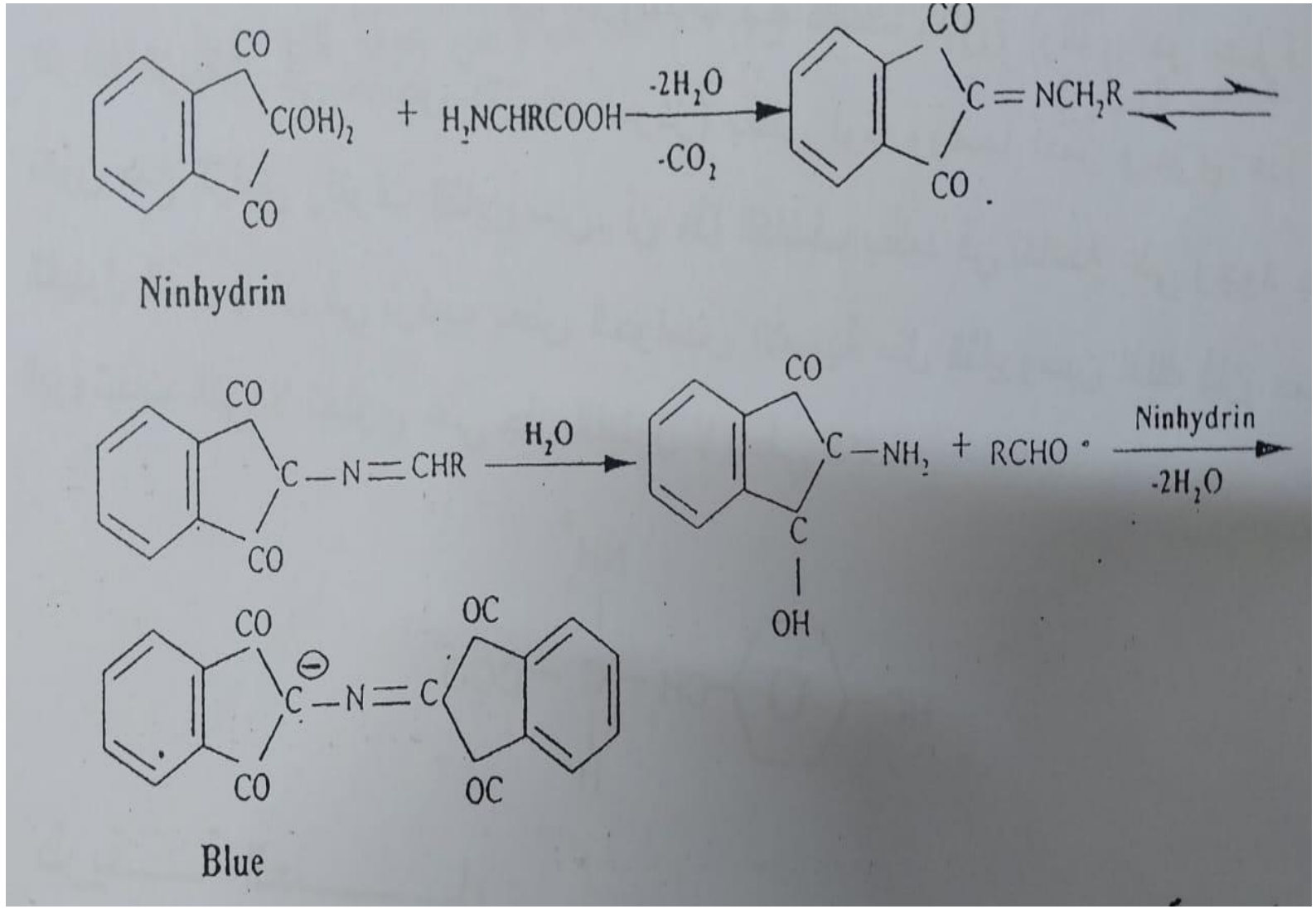
Ninhydrin test :

- It is used to detect proteins and amino acids.
- The reaction depends on the presence of the free amine (NH_2) group and free carboxyl group (COOH) . Therefore, all proteins and amino acids give a positive result for this test.


CO
C(OH)2
CO
+ H2NCHRCOOH
-2H2O
-CO2
CO
C = NCH2R
CO
Ninhydrin
CO
C — N = CHR
CO
H2O
CO
C — NH2
C
OH
+ RCHO
Ninhydrin
-2H2O
CO
C
N = C
CO
OC
OC
Blue

Procedure

- 1- Take two test tubes, put 1 milliliter of protein (albumin) in the first, and in the second, an amino acid.
- 2- Add 5 drops of ninhydrin solution 1% to each tube and heat for 10 minutes. Observe the results.

- The blue color resulting from the reaction is due to the negative ion of the salt formed by the union of two molecules of ninhydrin with the ammonia liberated after the oxidation of the amine group.

Derived proteins

- proteins derived from protein breakdown products
- (Protein → peptone → peptide → amino acids

Peptone is any of various protein derivatives that are formed by the partial hydrolysis of proteins

any of various products that result from the partial breakdown of proteins and that dissolve in water

Globular proteins:

- These are spherical or oval-shaped proteins that dissolve easily in water and are characterized by their frequent folding, forming spherical shapes, such as albumin, globulin, and protamine.

Albumin

- It is a water-soluble protein made in the liver and circulated throughout the body by the blood stream
- human albumin is a small globular protein with a molecular weight of 66.5 kilodaltons (kDa). It consists of 585 amino acids .

Gelatin

- gelatin consists of 98–99% protein, but it is not a nutritionally complete protein since it is missing tryptophan and is deficient in isoleucine, threonine, and methionine