

Standard and Specification > Natural Additives > Red Radish Color

Red Radish Color	
Definition	Red Radish Color is a pigment obtained by extracting reddish violet roots of radish (<i>Raphanus sativus</i> LINNE) of cruciferae with water or hydrated ethyl alcohol at room temperature. Its major pigment component is Pelargonidin acylglucoside of anthocyanins.
[Compositional Specifications of Red Radish Color]	
Content	Color value (E 10%, 1cm) of Red Radish Color should be higher than the indicated value.
Description	Red Radish Color is dark red powder with a slight characteristic scent.
Identification	(1) Test Solution obtained in Color Value section shows red color and a maximum absorption band near 515 nm.
Purity	<p>(1) Arsenic : 0.25 g of Red Radish Color is placed in a platinum, quartz, or porcelain crucible. 10 ml of magnesium nitrate in ethyl alcohol (1→50) is added to the crucible and then alcohol is ignited. It is then reduced to ash by heating at 450~550°. If carbonaceous substance persists, it is wetted with minute amount of nitric acid, which is further heat treated at 450~550°. After cooling, 3 ml of hydrochloric acid is added to the residue, which is then dissolved by heating in a water bath. When test for arsenic is carried out with this test solution, it should not be more than 4ppm.</p> <p>(2) Heavy Metals : 1 g of Red Radish Color is carbonized by heating mildly in a quartz or porcelain crucible. After cooling, add 2 ml of nitric acid and 5 drops of sulfuric acid, it is heated until white smoke disappears, which is then reduced to ash by further heating at 450~550°. After cooling, 2 ml of hydrochloric acid is added, which is then evaporated to dryness in a water bath. 3 drops of hydrochloric acid and 10 ml of hot water are added to the resulting residue, which is then heated for 2 minutes. After cooling, 1 drop of phenolphthalein indicator solution is added, then ammonia solution is added until the color of the solution becomes pale red. The resulting solution is transferred into a Nestler cylinder by rinsing with water. 50 ml of test solution is prepared by adding 2 ml of diluted acetic acid (1→20) and water. When this solution tested for heavy metals, the content should not be more than 20ppm. Color standard solution is prepared by the following procedure. 2 ml of nitric acid, 5 drops of sulfuric acid, and 2 ml of hydrochloric acid are added and evaporated to dryness in a crucible that is made of the same material used for test solution preparation. 3 drops of hydrochloric acid are added to the residue, which is then transferred into another Nestler cylinder as described above. Finally, 2 ml of lead standard solution, 2 ml of diluted acetic acid (1→20), and water are added to bring the total volume to 50 ml.</p>
Assay	<p>Appropriate amount of Red Radish Color is precisely weighed so that the absorption is within 0.3 ~ 0.7 and dissolved in citric acid-dibasic sodium phosphate buffer solution with pH 3.0 (total volume 100 ml). 1 ml of this solution is diluted to 100 ml with citric acid-dibasic sodium phosphate buffer solution with pH 3.0 (Test Solution). If necessary, the solution is centrifuged and the supernatant is used. Using citric acid-dibasic sodium phosphate buffer solution with pH 3.0 as a reference solution, absorption A is measured at the maximum absorption near 515 nm with 1cm path length. Color value is obtained using the following equation.</p> $\text{Color Value (E 10\%, 1cm)} = \frac{A \times 1,000}{\text{Weight of sample(g)}}$ <p>- Citric acid-dibasic sodium phosphate buffer solution (pH 3.0) Solution 1 : 0.1 M citric acid solution : 1 L of solution containing 21.01 g of citric acid (C₆H₈O₇·H₂O). Solution 2 : 0.2 M dibasic sodium phosphate solution : 1 L of solution containing 71.63 g of dibasic sodium phosphate (Na₂HPO₄·12H₂O). Solution 1 and Solution 2 are mixed well (159:41) and its pH is adjusted to 3.0.</p>
	Should not be used for the food items listed below.

Permitted Use Level of Red Radish Color

1. Natural food [meat, seafood (whale meat included), vegetables, fruits, marine algae, bean, and their simply processed food (peeled or cut)]
2. Tea
3. Hot pepper powder, red pepper powder or shredded red pepper
4. Kimchi
5. Fermented hot pepper soybean paste
6. Vinegar