

Standard and Specification > Natural Additives > Annatto Extract

Annatto Extract													
Definition	There are types, oil soluble pigment and water dispersible pigment. Oil soluble pigment is obtained by extracting seed skin of <i>Bixa orellana</i> L. with oil and fat or organic solvents (extracting solvent for oleoresin spices). Its major component is bixin (C ₂₅ H ₃₀ O ₄ = 394.52) of carotenoids. Water dispersible pigment is obtained by dispersing fine pigments contained in seed skins of <i>Bixa orellana</i> L. in water or propylene glycol. It can also be obtained by hydrothermally decomposing bixin under pressure. Its major component is bixin or norbixin (C ₂₄ H ₃₀ O ₄ = 380.49) of carotenoids. Dilutant, stabilizer, or solvent can be added for the purpose of color value adjustment and quality preservation.												
[Compositional Specifications of Annatto Extract]													
Content	Color value (E 10%, 1cm) of Annatto Extract should be higher than the indicated value.												
Description	Annatto Extract is reddish brown ~ brown liquid, lump, powder or paste with a slight characteristic scent.												
Identification	(1) Test Solution obtained in Color Value section of Annatto Extract shows orange yellow color and a maximum absorption near 500 nm or 470 nm.												
Purity	<p>(1) Arsenic : 0.25 g of Annatto Extract 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 Annatto Extract 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> <p>(3) Residual Solvents : When Annatto Extract is tested by Purity (4) for [Paprika Extract Pigments], the content of residual solvents should be.</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Methylene chloride, trichloro ethylene</td> <td style="text-align: right;">Not more than 30ppm</td> </tr> <tr> <td></td> <td style="text-align: right;">(individual or sum if used together)</td> </tr> <tr> <td>Acetone</td> <td style="text-align: right;">Not more than 30ppm</td> </tr> <tr> <td>Isopropyl alcohol</td> <td style="text-align: right;">Not more than 50ppm</td> </tr> <tr> <td>Methyl alcohol</td> <td style="text-align: right;">Not more than 50ppm</td> </tr> <tr> <td>Hexane</td> <td style="text-align: right;">Not more than 25ppm</td> </tr> </table>	Methylene chloride, trichloro ethylene	Not more than 30ppm		(individual or sum if used together)	Acetone	Not more than 30ppm	Isopropyl alcohol	Not more than 50ppm	Methyl alcohol	Not more than 50ppm	Hexane	Not more than 25ppm
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	Annatto Extract is precisely weighed so that the observed absorption lies within 0.3~0.7. It is dissolved in dimethylformamide for oil soluble pigment and in 0.1 N sodium hydroxide solution for water dispersible pigment (total volume = 100 ml). A mixture of water, dimethylformamide, and acetic acid (50:50:1) is added to 5 ml of this solution is diluted to 100 ml with a mixture of water, dimethylformamide, a												

Assay(Color Value)	<p>nd acetic acid (50:50:1). Using a mixture of water, dimethylformamide, and acetic acid (50:50:1) as a reference, a maximum absorption A of the Test Solution near 470 nm is measured. Color value is obtained using the following equation.</p> $\text{Color Value}(E\ 10\%,\ 1\text{cm}) = \frac{A \times 200}{\text{Weight of sample(g)}}$
Permitted Use Level of Annatto Extract	<p>Should not be used for the food items listed below.</p> <ol style="list-style-type: none"> 1. Natural food [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