Abstract

During some voluntary and non-voluntary activities, phenolic compounds have distinctive features like chelating metal ions, scavenging of free radical, regulating the activity of enzymes, and altering signal routes. According to epidemiological study, include phenolic-enriched foods in one's diet lowers the cancer, risk of heart disease, and osteoporosis. Extracting, purifying, and characterization of phenolic compounds from plants leaves, roots, flowers, or seeds have received a lot of attention due to their wide range of applications and advantages.Fisetin is one the important phenolic compounds belongs to Flavonol, a subclass of flavonoids and is extensively present in strawberry. Fisetin, like other flavonoids or polyphenols, has been discovered to be responsive in a variety of in vitro, in vivo, and in silico pattern, suggesting that it and its derivatives might be used as therapeutic drugs. Fisetin, in instance, has the capacity to prevent practically all sorts of tumors and carcinogens. As the separation of polyphenols from plants is thought to be straightforward, extraction and filtration of the corresponding chemical without jeopardizing their definitive end usage, composition, or nature necessitates a higher degree of knowledge and techniques. Fisetin is the targeted chemical that will be isolated and refined in this study and for the efficient purification enhance the retention potential of the stationery phase (graphene oxide nanocomposites). The current research study based on three portions, first is the extraction of fisetin from strawberry sample, second is the synthesis of graphene based nanocomposites from graphite and last is the purification of fisetin using graphene oxide nanocomposites based stationary phase. In the first step extraction of fisetin from strawberry is processed using solvent extraction technique. Ethanol/methanol is used for the extraction from strawberry on the vertex shaker. In the second step graphene oxide nanocomposites are synthesized from graphite. Formerly, graphene oxide is synthesized from graphite powder using Hummers' method then solvothermal method is used for the synthesis of graphene oxide nanocomposites. Lastly the graphene oxide nanocomposite based stationery phase is used for the purification of extracted fisetin from strawberry and make a comparison with silica based stationery phase and GONPs binded with silica gel. The

extraction of Fisetin from strawberries was found to be efficient when using a basic solvent extraction method. The extracted yield is approximately 40ml. The TFC value for the purified extract through GONPs with modified silica is maximum i.e. 4.51 mgCGA/g dry weight of sample as compared with graphene oxide nanocomposites and silica i.e. 4.13 and 2.33 mgCGA/g dry weight of sample respectively. The notion of immobilizing graphene oxide nanocomposites with silica and then employing this altered silica as a stationary phase for quantifying and purifying Fisetin was also effective. In terms of the immobilized stationary phase capability of graphene-based nanocomposites, graphene oxide nanocomposites based stationary phase contained more Fisetin than graphene oxide and silica gel. It was also proven that stationary phases based on graphene oxide nanocomposite had a higher retention potential for fisetin than basic silica stationary phases. The notion of employing GONP-based stationary phases for phenolic chemical purification might be investigated further for improved outcomes. The DPPH value for crude and purified extract is calculated as 415.3µg/ml and 350.23µg/ml while the TEAC value is 2.05mmolTE/g and 1.45mmolTE/g respectively.