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Review Article

Analytical Method Development: A Review

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ABSTRACT

The oldest form of medicine known to mankind is herbal medicine. Today, it is the most widely practiced form of medicine in the world. Using medicinal plants for treatment is considered very safe as there is no or minimal side effects. Most of the plant materials collected from the rain forests and other places are currently used for conducting extensive research for their potential medicinal value. In Ayush systems of medicine about 8,000 herbal drugs have been codified². One of them is *Coriandrum sativum* Linn. belongs to the family Apiaceae and commonly known as kishneez khushk in Unani medicine.³ It possesses multiple pharmacological activities which are revealed previously, such as anxiolytic, antidepressant, sedative-hypnotic, neuroprotective, antibacterial, antifungal, anthelmintic, insecticidal, antioxidant, cardiovascular, analgesic, anticonvulsant, memory enhancing, antidiabetic, anticancer, gastrointestinal, deodorizing, dermatological, hypolipidemic, anti-inflammatory, diuretic, reproductive, hepatoprotective, antimutagenic, detoxification etc^{4,14}. The current review gives an overview of the pharmacological effects and chemical constituents of *Coriandrum sativum*.

Keywords: *Coriandrum sativum* Linn. herbal medicine, pharmacological activities.

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INTRODUCTION

Analytical chemistry offers with quantitative evaluation of composition of substances and complex materials in numerous matrices through measuring bodily or chemical belongings of an extraordinary constituent of the components of hobby. Analytical methods are categorised in keeping with the belongings of the analyte measured.¹ The pharmaceutical analysis is one of the most crucial fields in analytical chemistry. Present day analytical chemistry is dominated through instrumental evaluation. there are such a lot of unique varieties of contraptions used these days that, it looks as if a difficult array of acronyms rather than a unified area of have a look at.² The analytical techniques have to be correct as required and now not as accurate as possible.³

Analytical strategies are classified into instrumental and chemical approach. Instrumental technique includes measurement of a light absorption or emission, fluorescence, conductivity and electrode capability. Chemical approach includes size of mass of the analyte by means of gravimetric or volumetric method. Analytical method play an important position in maintaining and assuring the quality of substance and are vital additives of first-rate warranty and first-class manage. several instrumental methods are used in pharmaceutical evaluation, among

these some crucial strategies are separation strategies, spectrometric techniques and other analytical techniques. For Pharmaceutical evaluations is the fundamental part of the pharmaceutical sciences. In pharmaceutical analysis section, the studies analyst is chargeable for 3 critical capabilities viz:

- Improvement of analytical method for raw substances, lively components and chemical intermediates of the product.
- improvement of analytical strategies for selective analysis of drug, excipients, degradation products and impurities together with identity of deterioration product, degradation pathway and volume of deterioration while saved at ambient and accelerated conditions.
- Development of analytical approach for micro and semi micro quantities of drugs and its metabolites in organic system.⁵

RECORDS OF ANALYTICAL CHEMISTRY

Analytical chemistry has been vital because the early days of chemistry, imparting techniques for determining which elements and chemical substances are gift in the object in question. During this era sizeable analytical contributions to

chemistry consist of the improvement of systematic elemental evaluation with the aid of Justus von Liebig and systematized organic evaluation based on the unique reactions of useful groups. The first instrumental analysis turned into flame emissive spectrometry developed with the aid of Robert Bunsen and Gustav Kirchhoff who observed rubidium (Rb) and caesium (Cs) in 1860.

Most of the predominant trends in analytical chemistry take vicinity after 1900. For the duration of this period instrumental evaluation turns into step by step dominant in the field. Particularly some of the basic spectroscopic and spectrometric techniques have been located in the early twentieth century and subtle in the overdue twentieth century.

The separation sciences follow a similar time line of improvement and additionally emerge as an increasing number of converted into excessive overall performance devices. Inside the Seventies many of those strategies started for use collectively to attain a complete characterization of samples.⁶

Technique development

Approach validation is the manner used to verify that the analytical system employed for a particular take a look at is appropriate for its supposed use. Effects from technique validation may be used to decide the nice, reliability and consistency of analytical outcomes; it's miles a quintessential a part of any precise analytical practice. It's miles the procedure of defining an analytical requirement, and confirms that the approach underneath consideration has overall performance capabilities consistent with what the application requires. Use of system this is within specification, working effectively and accurately calibrated is fundamental to the method validation process. Likewise the operator sporting out the research need to be capable inside the analysis beneath look at and feature enough expertise of the method/evaluation to attract conclusions from the observations because the validation paintings proceed. Pretty regularly method validation evolves from technique development and so the two sports are regularly carefully tied, with the validation observe employing the strategies and steps within the analysis as described with the aid of the method development.

Analytical methods want to be proven or revalidated

- Earlier than their advent into ordinary use;
- Whenever the conditions exchange for which the method has been tested (e.g., an instrument with special traits or samples with a exclusive matrix); and
- Whenever the technique is changed and the trade is out of doors the unique scope of the technique.⁷

CATEGORY OF ANALYTICAL METHOD

Qualitative analysis: It deals with the identity of materials. It's far challenge with what factors or compound found in sample.

Quantitative analysis: It presents numerical records concerning the quantity of analyte in measured quantity of sample.

Modern-day bodily strategies of evaluation are extremely touchy, providing precise and particular facts from small samples of materials. those are, for the maximum element, swiftly implemented and in trendy, are with no trouble amenable to automation For these reasons, these are actually in large use in product development, within the manipulate of manufacture and formula, as a check on the

steadiness for the duration of garage and tracking the use of drugs and drugs.⁸

The observation of analytical chemistry presents ideal education for almost all scientists. A course in quantitative analysis equips one with potential to plan and exercising the experimental paintings; it develops the capability to record and to interpret such experimental paintings, and it trains to understand and to talk what has been executed. The course in quantitative evaluation is a totally crucial hyperlink inside the chain of research that develops the clinical potential inside the chemist with its a couple of emphases on concept, laboratory work and high accuracy inside the evaluation of unknown pattern, quantitative evaluation is one of the maximum precious courses in scientific schooling.

The pharmaceutical dosage varieties of combinational pills are very much useful in multiple cures as opposed to the use of single drug components due to

- ✓ A couple of movement
- ✓ Fewer aspect consequences
- ✓ Faster alleviation and so forth.

To device an accurate estimation manner for each element of such multicomponent dosage shape containing numerous therapeutically active pills is not an clean assignment, as they're present in widely divergent proportions⁹. There are various strategies used in Quantitative evaluation that are widely labeled as Chemical/Classical strategies

Instrumental approach

Chemical/classical methods:

those methods depend on quantitative overall performance of a appropriate chemical response and both measuring the amount of reagent wished to finish the response or ascertaining the amount of response product obtained, e.g. Titrimetric (acid-base titration, oxidation-discount titration, non-aqueous titration, complicated formation), gravimetric and volumetric methods, and many others.

Instrumental strategies:

Those strategies are primarily based upon the dimension of bodily residences of a substance inclusive of electric or optical and to correlate them for dedication of awareness of analyte. Those homes are being exploited for traits of analytical strategies together with spectrophotometry, HPLC, GLC, Polarography, etc.

Now a day's instrumental techniques of evaluation are widely accepted over the classical strategies. These methods are extremely sensitive, supplying specific and specific statistics from small pattern materials. Relying upon the character and form of fabric, either single or in mixture, an appropriate technique of analysis is followed. Instrumental methods are typically a good deal faster than chemical methods and are applicable at attention a long way too small to be amenable to determination by way of chemical methods and find wide software in industry.¹⁰

Benefits of instrumental techniques:

- Small sample may be used
- excessive sensitivity is acquired
- Measurements received are reliable
- The dedication may be very speedy
- Even complex pattern may be dealt with easily¹¹

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