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Research Paper

Quantitativeanalysisofmetal Ionpresnt Incocoglucoside Surfactant

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Abstract
Various techniques use for the detection of metal ion one the perfect preference was represented in this review i.e Atomic Absorption Spectroscopy which is most preferred method to check the amount of ppm quantity of metal ion present in the many marketed preparation, the present study of Atomic Absorption Spectroscopy use for the quantitative analysis of metal ion present in Coco Glucoside. Coco glucoside was widely use for the preparation of many cosmetic preparation. The coco glucoside was prepared for the fermentation procedure of coconut oil with sugar in the deferent container hence the chances of metal hazards will be increase in the final finished product. which leads to metal poisoning in different pharmaceutical preparation. the final result was presented linearly and shown in graphs.

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I. Introduction

Atomic absorption spectroscopy (AAS) is a procedure for the quantitative determination of chemical elements using the absorption of optical radiation (light) by free atoms in the gaseous state. Atomic absorption spectroscopy is based on absorption of light by free metallic ions. The science of atomic spectroscopy has yielded three techniques for analytical use: atomic emission, atomic absorption, and atomic fluorescence. In order to understand the relationship of these techniques to each other, it is necessary to have an understanding of the atom itself and of the atomic process involved in each technique. The atom is made up of a nucleus surrounded by electrons. Every element has a specific number of electrons which are associated with the atomic nucleus in an orbital structure which is unique to each element. The electrons occupy orbital positions in an orderly and predictable way(1). The lowest energy, most stable electronic configuration of an atom, known as the ‘‘ground state’’, is the normal orbital configuration for an atom. If energy of the right magnitude is applied to an atom, the energy will be absorbed by the atom, and an outer electron will be promoted to a less stable configuration or ‘‘excited state’’. As this state is unstable, the atom will immediately and spontaneously return to its ground state configuration. The electron will return to its initial, stable orbital position, and radiant energy equivalent to the amount of energy initially absorbed in the excitation process will be emitted(2).

The ease and speed at which precise and accurate determinations can be made with this technique have made atomic absorption one of the most popular methods for the determination of metalsA third field in atomic spectroscopy is atomic fluorescence. This technique incorporates aspects of both atomic absorption and atomic emission. Like atomic absorption, ground state atoms created in a flame are excited by focusing a beam of light into the atomic vapor.Instead of looking at the amount of light absorbed in the process, however, the emission resulting from the decay of the atoms excited by the source light is measured. The intensity of this ‘‘fluorescence’’ increases with increasing atom concentration, providing the basis for quantitative determination. The source lamp for atomic fluorescence is mounted at an angle to the rest of the optical system, so that the light detector sees only the fluorescence in the flame and not the light from the lamp itself. It is advantageous to maximize lamp intensity with atomic fluorescence since sensitivity is directly related to the number of excited atoms which is a function of the intensity of the exciting radiation(3).

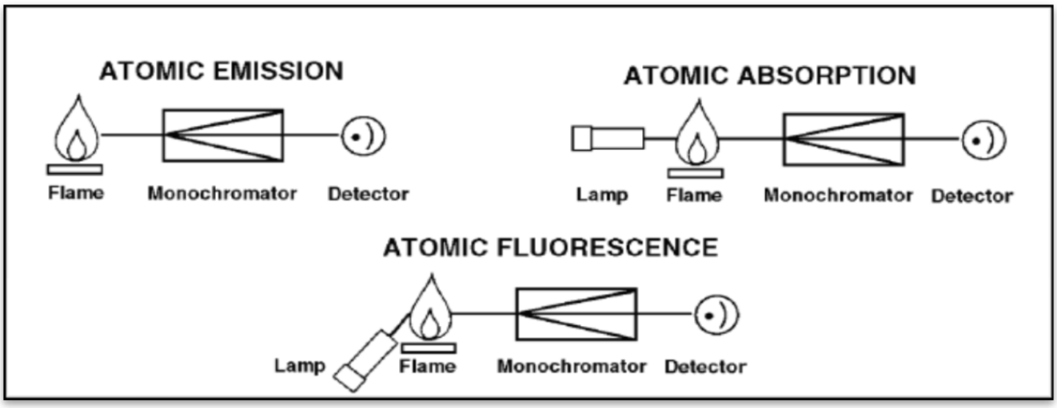

Fig No 1 Atomic spectroscopy systems.

Instrumentation of AAS.

To understand the workings of the atomic absorption spectrometer, let us build one, piece by piece. Every absorption spectrometer must have components which fulfill the three basic requirements. There must be a light source, a sample cell and a means of specific light measurement[4]. A light source which emits the sharp atomic lines of the element to be determined is required. The most widely used source is the hollow cathode lamp. These lamps are designed to emit the atomic spectrum of a particular element, and specific lamps are selected for use depending on the element to be determined. It is also required that the source radiation be modulated (switched on and off rapidly) to provide a means of selectively amplifying light emitted from the source lamp and ignoring emission from the sample cell. Source modulation can be accomplished with a rotating chopper located between the source and the sample cell, or by pulsing the power to the source. Special considerations are also required for a sample cell for atomic absorption. An atomic vapor must be generated in the light beam from the source. This is generally accomplished by introducing the sample into a burner system or electrically heated furnace aligned in the optical path of the spectrophotometer. Several components are required for specific light measurement[5].

A monochromator is used to disperse the various wavelengths of light which are emitted from the source and to isolate the particular line of interest. The selection of a specific source and a particular wavelength in that source is what allows the determination of a selected element to be made in the presence of others[6]. The wavelength of light which is isolated by the monochromatic is directed onto the detector, which serves as the ‘‘eye’’ of the instrument. This is normally a photomultiplier tube, which produces an electrical current dependent on the light intensity[7].

The electrical current from the photomultiplier is then amplified and processed by the instrument electronics to produce a signal which is a measure of the light attenuation occurring in the sample cell. This signal can be further processed to produce an instrument readout directly in concentration units[8].

Light sources

An atom absorbs light at discrete wavelengths. In order to measure this narrow light absorption with maximum sensitivity, it is necessary to use a line source, which emits the specific wavelengths which can be absorbed by the atom. Narrow line sources not only provide high sensitivity, but also make atomic absorption a very specific analytical technique with little spectral interference. The two most common line sources used in atomic absorption are the ‘‘hollow cathode lamp’’ and the ‘‘electrodeless discharge lamp.’’ The Hollow Cathode Lamp The hollow cathode lamp is an excellent, bright line source for most of the elements determinable by atomic absorption[9]. The cathode of the lamp frequently is a hollowed-out cylinder 2-2 Concepts, Instrumentation and Techniques of the metal whose spectrum is to be produced. The anode and cathode are sealed in a glass cylinder normally filled with either neon or argon at low pressure. At the end of the glass cylinder is a window transparent to the emitted radiation[10].

Material and Chemical

Table No 3.1 List of chemical/Material used

Serial Number	Name of material/Chemical	Specification
1	Coco Glucoside	Vedo oil
2	Atomic absorption spectroscopy	Esel C-2 Loading
3	Distilled Water	HPLC Gread

Experimental work.

Method for preparation of coco glucoside.

Commercial production of coco Glucoside and other alkyl polyGlucosides generally starts by mixing coconut alcohol with some kind of sugar, glucose, or glucose polymer under acidic conditions.

The first report of the synthesis of alkyl Glucoside s, reported by Fischer in 1893, involves reacting glucose with anhydrous ethanol under acidic conditions to produce ethyl Glucoside . Though not at all new, alcoholysis of glucose and polysaccharides under acidic conditions is still the method of choice. It is considered to be a "green" process that can involve the use of natural and renewable sources (e.g., the alcohols can be obtained from coconut oil or palm oil and the glucose or polysaccharide can be obtained from corn, potato, or wheat starch). Of note, the reaction conditions that produce an ether linkage between a fatty alcohol and the hydroxy group of glucose are known to cause condensation of one molecule of glucose with another molecule of glucose, thereby producing alkyl polyGlucosides (APGs) even when an alkyl monoGlucosides may be the intended product.As this is long fermentation procedure we prefer to work on marketed preparation of Coco Glucoside.As the coco gluoside was parched from the market it essential to analyze and evaluate for detection of metal ion.

Absorbance on AAS for Coco Glucoside.

Marketed coco Glucoside of 10 ml was poured into the 10 ml of beaker and volume was made up to 100 ml with distilled water to prepare 10% solution of coco Glucoside surfactant. The same procedure was repeated for the preparation of 9%, 8%, 7% till 1% of coco Glucoside solution. The prepared concentration of the coco Glucoside was subjected to AAS absorbance as follows for different metal ion eg. Fe, Zn.

Coco Glucoside containZin in the dilution.

Table No 2Zinc dilution

Sr. No	% aqueous solution of Coco Glucoside	Concentration in PPM
1	1 percent of aqueous solution of Coco Glucoside	0.10 ppm
2	2 percent of aqueous solution of Coco Glucoside	0.12 ppm
3	3 percent of aqueous solution of Coco Glucoside	0.19 ppm
4	4 percent of aqueous solution of Coco Glucoside	0.22 ppm
5	5 percent of aqueous solution of Coco Glucoside	0.28 ppm
6	6 percent of aqueous solution of Coco Glucoside	0.31 ppm
7	7 percent of aqueous solution of Coco Glucoside	0.32 ppm
8	8 percent of aqueous solution of Coco Glucoside	0.38 ppm
9	9 percent of aqueous solution of Coco Glucoside	0.41 ppm
10	10 percent of aqueous solution of Coco Glucoside	0.42 ppm

Coco Glucoside contain Iron in the dilution

Table No 2Iron dilution

Sr.No	% aqueous solution of Coco Glucoside	Concentration in PPM
1	1 percent of aqueous solution of Coco Glucoside	0.10 ppm
2	2 percent of aqueous solution of Coco Glucoside	0.12 ppm
3	3 percent of aqueous solution of Coco Glucoside	0.15 ppm
4	4 percent of aqueous solution of Coco Glucoside	0.19 ppm
5	5 percent of aqueous solution of Coco Glucoside	0.24 ppm
6	6 percent of aqueous solution of Coco Glucoside	0.30 ppm
7	7 percent of aqueous solution of Coco Glucoside	0.31 ppm
8	8 percent of aqueous solution of Coco Glucoside	0.34 ppm
9	9 percent of aqueous solution of Coco Glucoside	0.42 ppm
10	10 percent of aqueous solution of Coco Glucoside	0.43 ppm

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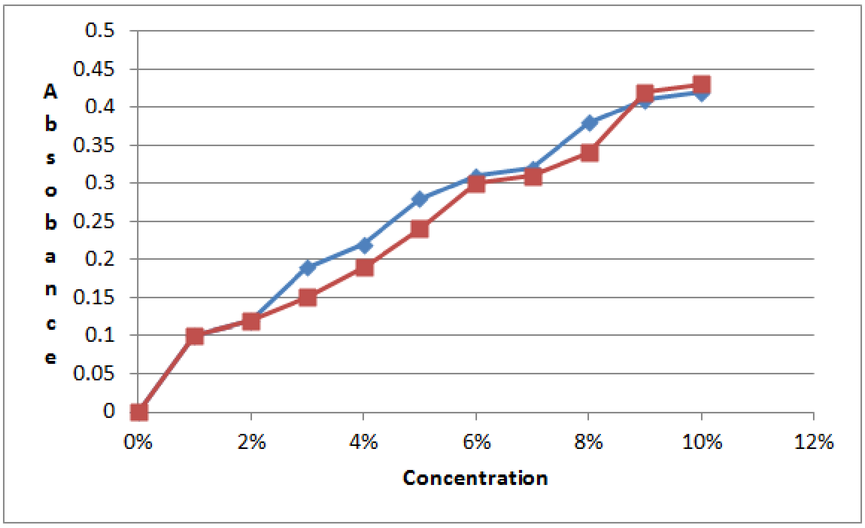
II. Result:



Graph No 1 Showing concentration of Fe and Zn in deferent dilution of Coco Glucoside.

- Red- Show Iron.
- Blue- Show Zinc.

III. Conclusion

The present wok was carried out to study the metal ion in natural surfactant. Also the study use for separation of metaion and check the quantitative analysis on atomic absorption spectroscopy. As graphical representation shows the increasing ppm quantity of metal ion Fe and Zn was confirms the presence of metal in coco glucoside.

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