OPEN ACCESS Freely available online

ISSN: 2153-2435
Pharmaceutica Analytica Acta

Commentary

Pharmaceutical Analysis of Biomolecules: Isolation, Applications and Biotechnology

Hythm Scriba*

Department of Pharmaceutical Analysis, University of Illinois, Chicago, USA

DESCRIPTION

Biomolecules are the basic units of life. They are organic molecules that contain carbon and other elements, such as hydrogen, oxygen, nitrogen and phosphorus. They have different structures and functions in living organisms, such as plants, animals and humans. They take part in various biological processes, such as making energy, sending signals, storing information and causing diseases. They are very small and complex. They can have different shapes and forms depending on their environment and interactions. They can also change and affect each other in different ways.

Some of the methods used to separate biomolecules are centrifugation, filtration, precipitation, extraction, chromatography and electrophoresis. Centrifugation is spinning the sample very fast to make heavier things go to the bottom and lighter things stay on top. Filtration is passing the sample through a filter that has small holes to let smaller things go through and keep bigger things out. Precipitation is adding something to the sample that makes some things clump together and fall out of the solution. Extraction is using a solvent that dissolves some things but not others to separate them. Chromatography is using a stationary phase and a mobile phase to separate things based on how they stick to or move along the stationary phase. Electrophoresis is using an electric field to separate things based on how they move in a gel.

Some of the methods to characterize biomolecules are mass spectrometry, nuclear magnetic resonance spectroscopy, infrared spectroscopy, ultraviolet-visible spectroscopy, fluorescence spectroscopy and bioassays. Mass spectrometry is measuring the mass of molecules or fragments of molecules to identify them. Nuclear magnetic resonance spectroscopy is using a strong magnet and radio waves to measure how atoms in molecules behave in different environments to determine their structure. Infrared spectroscopy is using infrared light to measure how molecules vibrate to identify their functional groups. Ultraviolet-visible spectroscopy is using ultraviolet or visible light to measure how many light molecules absorb or reflect to determine their concentration or colour. Fluorescence spectroscopy is using light to excite molecules and measure how much light they emit to determine their properties or interactions. Bioassays are using living cells or organisms to measure how molecules affect their growth or activity.

Biotechnology is the use of living systems or processes for industrial or medical purposes. It can involve the manipulation or modification of biomolecules to enhance their properties or functions for specific applications. Biotechnology can be used to produce recombinant proteins or antibodies that can be used as drugs or diagnostics for various diseases. Biotechnology can also be used to engineer microorganisms or cells that can produce useful substances or perform specific tasks for various industries. Biotechnology depends on the study of biomolecules to ensure the quality, safety and efficacy of the products or processes that it creates. The study of biomolecules is a fascinating and important field that requires the integration of knowledge and skills from chemistry, biology, physics and engineering. It is also a rapidly evolving field that incorporates new methods and tools to cope with the increasing complexity and diversity of biomolecules that encounter in nature or create in the laboratory. The study of biomolecules is essential for advancing our understanding of life sciences and improving human health.

Correspondence to: Hythm Scriba, Department of Pharmaceutical Analysis, University of Illinois, Chicago, USA, E-mail: scribahythm@gmail.com

Received: 03-Apr-2023, Manuscript No. PAA-23-21211; **Editor assigned:** 07-Apr-2023, Pre QC No. PAA-23-21211 (PQ); **Reviewed:** 21-Apr-2023, QC No PAA-23-21211; **Revised:** 28-Apr-2023, Manuscript No. PAA-23-21211 (R); **Published:** 04-May-2023, DOI: 10.35248/2153-2435.23.14.730

Citation: Scriba H (2023) Pharmaceutical Analysis of Biomolecules: Isolation, Applications and Biotechnology. Pharm Anal Acta. 14:730.