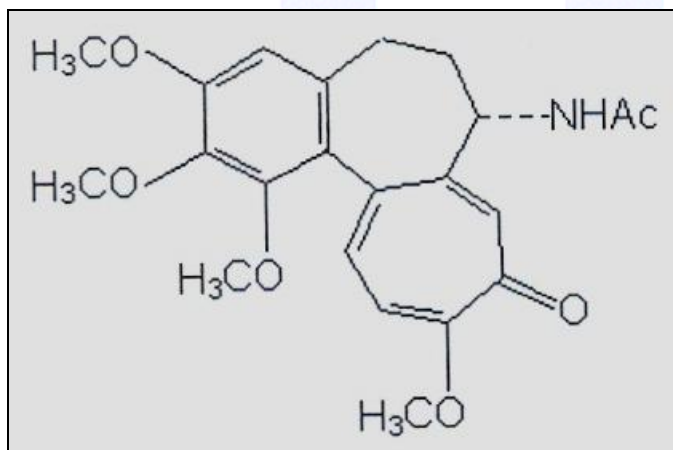




Biological Industries Israel
Beit Haemek Ltd.

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Product Profile



Product Name:	Colchicine Solution
Product Catalog Number	12-003-1
Unit Size Availability:	(C) 25ml
Formulation:	Yellow--Colored Liquid Solution
Specified Storage Conditions:	2-8°C
Stability: (Under Specified Handling & Storage)	Please Refer to the Product Label

Important Note! Please read the *MSDS* and *Product Profile* carefully in their entirety before using this material for possible safety precautions and potential hazards.

Product Description

Colchicine is a major plant alkaloid from *Colchicum autumnale* L. of the family Liliaceae. It is also commonly known as the Meadow Saffron. This plant extract is also found in other *Colchicum spp.* and is highly poisonous. It is used as a Cell Synchronization Agent (CSA) that, at appropriate dilutions, inactivates the spindle-fiber mechanism during metaphase by systematically immobilizing chromosomes at the metaphase plate. The metaphase plate is that imaginary line that is equidistant from the two centrosome poles where the chromosomal centromeres arrange themselves. *Colchicine* and its derivatives have proven to be invaluable for mitotic evaluation of cultured cells. *Colchicine* disrupts active transport by depolymerizing microtubules by limiting microtubule formation. In addition to this, it is known for inducing apoptosis by blocking mitosis in Pheochromocytoma (PC12) cells and in cerebellar granule cells.

Mechanism of Action

The precise Mechanism of Action (MOA) of *Colchicine* has not been completely established, although utilized for various therapeutic effects in Human Medicine, we know of its microtubule-inhibiting effects in various cells such as white blood cells (leukocytes) possibly by binding to and interfering with polymerization of the microtubule subunit, the globular protein, tubulin. Tubulin is the major constituent of microtubules which are obligate, proteinaceous elements found in nearly all prokaryotic cells. These microtubules, in conjunction with other cell cytoskeleton components, play a well-known role in basic cellular processes such as:

- ✓ Cell Movement (via Flagella & Cilia)
- ✓ Cell Organelle Positioning
- ✓ Extracellular Transport (via Cilia)
- ✓ Intracellular Transport
- ✓ Maintenance of Cell Shape
- ✓ Segregation of Genetic Material

In principle, a drug that affects the cell cycle mitotic stages has potential value as a cell inhibitor against those cells which grow more rapidly than others. In more basic studies, it has been utilized as a probe for mitotic stages in a given cell type. The tropolone colchicines and the colcemid alkaloids are especially useful because they bind stoichiometrically to microtubule proteins which are fundamental to mitotic mechanisms. They also have a high-binding capacity albeit, not absolute, degree of specificity for animal-cell tubulin protein. It has been reported that Colchicine and related alkaloids also inhibit lectin-mediated stimulation of RNA synthesis in Human Peripheral Blood Lymphocytes (HPBL's).

The effect of *Colchicine* like Colcemid, depends upon the length of exposure and the concentration of the substances tested in obtaining an adequate number of mitotic cells. The different effects of Colchicine and its derivatives is essentially due to their individually unique chemical structures which determines the interactions with respective receptors thereby modifying the Mechanism Of Action (MOA) on the cell mitotic apparatus. Colchicine may exert an obvious effect on the prophases and metaphases of different cell types more or less than other of its derivatives.

Restoration of Colchicine-Induced Mitosis

Restoration of the normal course of Colchicine-induced Mitosis after its blocking action by Colchicine takes place through additional protein synthesis, that is, through the formation of new microtubules of the division spindle.

Colchicine has been utilized for various objectives such as, among others:

- ◆ Lymphocyte Karyotyping Chromosome Analysis
- ◆ Amniotic Fluid Cell Chromosome Analysis
- ◆ Cell Synchronization Techniques

Some Predominant Characteristics of Colchicine include:

- § Alkaloid-Extract Similar to Colcemid
- § Mitotic Inhibitor
- § Exposure & Concentration-Dependent
- § Reversible Effects
- § Sterile
- § Liquid Solution in DPBS

Storage, Handling, Stability Precautions and Disclaimer:

For *in vitro* diagnostic use only. It is not intended for therapeutic use. Handle with care. As it is mutagenic, teratogenic and tumorigenic, it has the potential for severe target-organ effects. **Please refer to the MSDS for more details!**

As with any other liquid media formulations, deterioration of liquid media may be recognized by any of the following characteristics, among others including: (a). color change, (b). presence of clumping/flocculent debris/ granulation/ particulates/ precipitates or sediments (c). insolubility,(d). and/or decrease in expected performance parameters. Any material described above should not be used and therefore discarded.

Although each batch of Colchicine is performance tested, the use of Biological Industries Colchicine does not guarantee the successful outcome of any diagnostic testing.

Instructions/Procedure

- 1) Take a bottle of *Colchicine* from the specified storage conditions at 2-8°C and read the label.
- 2) Use aseptic/sterile technique under a laminar-flow culture hood and follow established laboratory protocols.

Quality Control

Test	Specification
Osmolality:	270-290 mOsm/kg
pH:	7.2-7.5
Sterility:	Sterile

Auxiliary Products

Product Name	Catalog Number	Storage Temperature
BIOAMF-1 Basal Medium	01-190-1	2-8°C
BIOAMF-1 Supplement	01-192-1	-20°C
BIOAMF-2 Complete Medium	01-194-1	-20°C
BIOAMF-3 Complete Medium	01-196-1	-20°C
Peripheral Blood Karyotyping Medium Without Phytohemagglutinin	01-198-1	-20°C
Bone Marrow Karyotyping Medium Without Conditioned Medium	01-199-1	Please See Product Label
Hematopoietic Cell Karyotyping Medium With Conditioned Medium	01-200-1	-20°C
EZ Lympho-Sep™-Lymphocyte Separation Tubes	01-899-U	Please See Product Labels
Sodium Citrate Solution (0.8%)	01-934-1	Room Temperature(15-30°)
Trypsin EDTA, 10X Concentrate	03-051-1	-20°C
Colcemid Solution, 10µg/ml in DPBS	12-004-1	2-8°C
Potassium Chloride(KCl) Solution(0.075M)	12-005-1	2-8°C
Phytohemagglutinin-M(PHA-M)	12-006-1	2-8°C
Cell Synchronization Kit	12-008-60	-20°C
Note: For a list of Antibiotics, Serum, Reagents and other Supplements, please refer to our Product Catalog/Product Profiles/Product Guides and Internet Site.		

References:

- 1) Moorehead, P.S. *et al.*, "Chromosome Preparations of Leukocytes Cultured from Human Peripheral Blood," *Ex. Cell Res.*, 20:613-616(1960).
- 2) Nowell, P.C. "Phytohemagglutinin- An Initiator of Mitosis in Cultures of Normal Human Leukocytes," *Cancer Research*, 290:462-466(1960).
- 3) Barch, M.J.(ed.). The Association of Cytogenetic Technologists Laboratory Manual, Second Edition, (1991).
- 4) Biological Industries (BI) Specifications
- 5) Martindale, *The Extra Pharmacopeia*, 28th Edition, Royal Pharmaceutical Society: London, England pps.416-417.
- 6) Biological Industries (BI) Product Guide, "Human Cytogenetic Products," p.8.
- 7) O'Neil, MaryAdele J. *et al.*, The Merck Index, 14th Edition. White House Station, New Jersey, 2006, Monograph Number: 2471, p.2476