Product Profile

Product Name:	*DMEM 2X Conc., with 4.5g/L D-Glucose(High Glucose) without L-Glutamine , with Sodium Bicarbonate*
Product Catalog Number	*01-055-9*
Unit Size Availability:	(A)500ml ;(B)100ml
Concentration:	*2X*
Formulation:	Red-Colored 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:

DMEM 2X Conc., High Glucose, without L-Glutamine, with Sodium Bicarbonate is Dulbecco's modification of Eagle's medium (BME) that is considered one of the more common (e.g. MEM & RPMI) and less complex in contrast to enriched media like Ham's F-12 or CMRL among others which are utilized not only for more specialized cell types but also as the basis for some of the more unique Serum-Free Media formulations. In essence, DMEM is a basal medium that requires supplementation in order to become a so-called complete or wide-ranging medium with a wider array of applications. DMEM 5X, High Glucose contains a four-fold higher concentration of Amino Acids (AA's) and vitamins in addition to other ancillary constituents. The original DMEM formulation contains 1000mg/L of glucose and was first reported for culturing Mouse Embryonic Cells MEC's). A higher glucose level (4500mg/l) has proven to be optimal for the cultivation of other cell types

Most common types of media consists of an isotonic, buffered basal nutrient enriched environment which provides an energy source, inorganic salts, vitamins, amino acids as well as additional constituents(e.g. supplements) according to the demands of a particular cell line. This relatively more complex medium formulation provides the optimal cell-culture environment in which *in vitro* culture conditions mimic those of the *in vivo* environment including basic nutritional requirements, osmotic pressure, physiological pH, temperature among other considerations. At a minimum, it consists of the foundation medium components that are all part and parcel of a pre-tested complete media to assist the cells in meeting their metabolic demands.

DMEM 2X Conc., High Glucose, without L-Glutamine, with Sodium Bicarbonate contains no growth-promoting factors or antimicrobials. The type of medium recommended usually is dependent upon the type and character of the cells in culture. Supplementation is the process in which specific additions or supplements (e.g. growth factors, serum, fatty-acids, buffers, and hormones) complement a typical basal or balanced salt solution medium or more complex media such as Iscove's Modification of DMEM. These more complex media not only meet the minimum requirements for cell growth and proliferation but also are part and parcel of a much wider array of factors culminating in a final medium that segues with the essential cell-niche requirements demanded for optimal results.

For example the addition of L-Glutamine, a precursor of glutamate, is one of the most readily available sources of energy for many rapidly dividing cell-types for use *in vitro* and is a key component and essential amino acid that is required in many cell-culture media formulations and in virtually all mammalian cells in culture. Supplementation with Sodium Pyruvate serves as an additional an easily accessible carbohydrate energy source for cells in culture. Along with D-glucose, these balanced energy sources serve as carbon skeletons for cell anabolic processes in addition to nucleic acid metabolism and protein production while limiting the potential cumulative build-up effects of toxic levels of ammonia. DMEM utilizes a Sodium Bicarbonate ($NaHCO_3$) Buffer System thereby requiring artificial levels of CO_2 to maintain the required pH. Optimally, a 7-10% CO_2 level is maintained but it has been successfully used at a 5% CO_2 level. Lower CO_2 levels increases the pH especially when the medium is exposed to ambient levels of CO_2 in the presence of $NaHCO_3$. Therefore, supplementation may affect shelf-life and storage conditions by the very nature of the supplements.

Serum and Serum Products

DMEM is most commonly supplemented with 5-10% Fetal Bovine Serum (FBS). Serum or serum-like replacements are necessary for the growth and proliferation of cells. Serum is largely undefined, but it supplies a mixture of all types of proteins, structural, carrier and functional proteins including essential growth factors, hormones, minerals, trace elements and even inhibitory substances. Serum supplementation is a crucial planning step that plays a vital role in the success of the final medium. *Biological Industries'* Pre-Screened and Pre-Tested Serum undergoes the most stringent and rigorous Quality Control/Assurance standards and protocols testing all raw materials and finished products in order to meet the demands of international markets and ensure high quality and consistency. All our serum products meet approved compliance validation and specifications prior to use and or release of the final product to the end-user. *BI's* Fetal Bovine Serum (FBS) undergoes a methodical and comprehensive battery of Physico-Chemical, Microbiological and Biological Performance Testing Procedures. Each batch is traceable, well-documented from source of origin through the thorough and systematic Quality Control process. All documentation and certification are available upon request.

DMEM 2X Conc., High Glucose, *without L-Glutamine*, *with Sodium Bicarbonate* contains numerous important basic constituents in a ready-to-use formulation that includes a typical and wide variety of elements, among others:

- Amino Acids
- Glucose
- Inorganic Salts
- Vitamins
- Trace Elements

Some Predominant Characteristics of *DMEM* 2X *Conc.*, *High Glucose, include*:

- *2X Conc.*, Liquid Formulation
- With 4.5g/L Glucose(1:2 Dilution)
- With Phenol Red($C_{19}H_{13}NaO_5S$) as a pH indicator
- With Sodium Bicarbonate($NaHCO_3$)
- Without Sodium Pyruvate ($C_3H_3NaO_3$)
- Without L-Glutamine
- Promotes Cell Performance, Productivity & An Overall More Uniform & Consistent Media Performance
- Sterile-Filtered(0.1µ),Cell-Culture and Endotoxin-Tested

Storage, Handling, Stability Precautions and Disclaimer:

For *in vitro* diagnostic use only.

DMEM 2X Conc., High Glucose, *without L-Glutamine*, *with Sodium Bicarbonate* is stable when stored under defined conditions at 2-8°C. Lower CO_2 levels increases the pH especially when the medium is exposed to ambient levels of CO_2 in the presence of $NaHCO_3$. Therefore, supplementation may affect shelf-life and storage conditions by the very nature of the supplements. The product is light-sensitive and therefore should not be left in the light. When stored in the dark under ideal conditions, the product is stable until the expiry date.

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.

Instructions/Procedure:

Directions for the Preparation of Single Strength Synthetic Liquid Media (1X) From Concentrated Media:

1. Measure out sterile culture grade water (Cat. No.: 03-055-1) to approximately 70% of desired total volume of media. Pour water into an appropriate sterile mixing container that is close to the desired final volume. The water should be at room temperature.
2. Add the required amount of the 2X concentrated medium.
3. Add the desired amount of L-Glutamine Solution 200mM (Cat. No. 03-020-1) if required.
4. Add the desired amount of Sodium Bicarbonate Solution 7.5% (Cat. No. 03-040-1).
5. Add antibiotics solution if desired.
6. Add water to the final volume. During the dilution stir gently into equilibrium. If necessary, adjust pH with sterile 1 N NaOH or HCl.
7. Add the desired amount of serum, if required and Store at 2ºC-8ºC.

Quality Control:

Test	Specification
Appearance:	Clear Solution
Cell-Culture:	Pass
Cell Line:	A-549
Endotoxins:	Test and Record
Osmolality(1X):	320-354 mOsm/kg
pH:	7.1-7.5
Sterility:	Sterile

Auxiliary Products

Product Name	Catalog Number	Storage Temperature
DMEM Low Glucose 5X, without L-Glutamine, without Sodium Bicarbonate	01-050-4	15-30°C
DMEM with D- Glucose 4500mg/L,without Sodium Pyruvate, without L-Glutamine, without Phenol Red	01-053-1	2-8°C
DMEM with D- Glucose 4500mg/L,without Sodium Pyruvate, without L-Glutamine	01-055-1	2-8°C
DMEM High Glucose 5X, without L-Glutamine, without Sodium Bicarbonate	01-055-4	15-30°C
L-Glutamine Solution 29.2mg/ml in Saline	03-020-1	-20°C
L-Alanyl-L-Glutamine Solution(A Dipeptide Substitute)	03-022-1	-20°C
Penicillin-Streptomycin Solution	03-031-1	-20°C
Sodium Pyruvate	03-042-1	-20°C
Water, Cell Culture Grade	03-055-1	15-30°C
Fetal Bovine Serum(FBS)	04-001-1	-20°C
Adult Bovine Serum	04-003-1	-20°C
Note: For a list of other Antibiotics, Serum or other Reagents, please refer to our Product Catalog/Product Profiles/Guides and Internet Site.		

References:

[1]Biological Industries (BI) Specifications

[2]Darling, D.C. and Morgan S.J. Animal Cells: Culture and Media, John Wiley & Sons, New York, 199