In vitro analysis of the effect of Go Ark on Human Peripheral Blood Lymphocytes

Research Article

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Abstract

Cow is worshiped in India as “Gomata” since ancient time. Its values have been signified in Vedas, Puranas & Ayurveda. Its urine/Go Ark is used in rituals & medicines traditionally in India. The Significance of Cow Urine has been studied by many workers. Now it is available in the market as distillate. Hence this study was designed to assess the potential of Fresh Go Ark (FGA) and Distillate Go Ark (DGA) on Human Peripheral blood lymphocytes (PBL) in Vitro using MTT Assay. It was found that FGA & DGA both had the potential to enhance the cell viability of Human PBL. FGA showed greater potential towards the enhancement of cell viability on Human PBL than that of DGA. However the difference between the impacts of FGA & DGA was not found to be significant when tested through Two way ANOVA.

Key Words: Fresh GoArk, Distillate Go Ark, MTT Assay, Cow urine, Cell viability, Human PBL.

Introduction

Cow in India is worshiped like mother of all living beings which provides all pleasures to them. All the products obtained from cow possess medicinal properties. Cow urine/Go Ark (GA)/ is used as a medicine to cure from many curable and incurable ailments. The significance of GA is mentioned in many Ayurvedic classical texts, such as Sushrut Samhita, Bhavprakash and Charaka Samhita.(1)

GA is supposed to have therapeutic value. It is used in many drug formulations. Essentially, GA is used for purification and also as a disinfectant. It has a shelf life of around 5 years. So it can be the most effective natural antiseptic and disinfectant as compared to the synthetic chemicals which are currently been used for the same purposes by the people. (2)

Bhadauria et al (3) explained that GA is not a toxic substance as it contains 2.5% urea, 95% water and 2.5% a mixture of hormones, salts, minerals and enzymes.

GA is a secretion of animal origin with an effective medicinal & therapeutic uses. Cow (Kamadhenu) is considered as a holy animal by Indians. In Rigveda (10/15), considers GA as nectar. Numerous medicinal properties of GA are mentioned in Charak (shloka-100) and in Susruta (45/221) such as reversal of certain cardiac and renal diseases, anemia, jaundice, weight loss, indigestion, diarrhea, edema, skin diseases including vitiligo, stomach ache and hemorrhoids. It is capacity to correct all the imbalances in the body and maintains the general health of organisms. (4)

It is believed that GA is gifted by god to the people. Now a day’s a number of incurable diseases are occurring in the world harming human societies. GA is solution for all diseases which is used for treating illnesses like skin disorder, blood pressure, constipation, cancer, diabetes, AIDS etc. GA has been used in the rural areas in India since ancient time as an effective antiseptic for skin diseases, wounds, bathing, etc. (5)

Eight types of animals can be used for obtaining urine, out of which GA is believed as the best. Skin-disorders (Kushtha, Pama, Kilasa, Kandu), Gastro Intestinal disorders (Kamala, Pandu, Gulma, Atisara, Krumi, Aanaha, Mutraroga), Kasa, Shwasa and Visha are treated by the use of GA. Oral administration of GA is used to treat diseases. (6)

Nitrogen, phosphate, sulphur, manganese, sodium, iron, chlorine, silicon, magnesium, tartaric and calcium salts, maleic, vitamin A, B, C, D, E, citric, enzymes, creatinine, minerals, lactose, gold acids and hormones are found in GA. GA ingredients resembles with human body. Therefore, consumption of GA is beneficial to retain the equilibrium of these substances. It cures many such diseases which are incurable. (7)

GA is considered the elixir of life in the ancient scriptures of Ayurveda. GA based drug formulations would certainly be proved to have a potential medicine that will diminish the increasing pressure on the use of antibiotics and chemicals. It has the potential to be used for the management of many diseases. This urine therapy could have a great scope for curing wide range of diseases which are dreadful because it is
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MTT ASSAY
MTT assay was performed according to Mosmann (13) with some modification. Aliquots of (180µl) of the prepared lymphocytes suspension(3.03x10^5) were seeded into a 96 well polystyrene tissue culture plate in 6 replicates of each sets i.e. SET-1 and SET-2.

- One row (A) containing only medium and cells served as a control. FGA and DGA dilutions were made and were added to cell suspension in the concentrations of 100% (B), 70% (C), 40% (D), 10% (E) and 1% (F). A-F indicated the rows of microtitre plate to be used for the treatment under SET-1 and SET-2. Each concentration of FGA and DGA (20µl) was tested on cell suspension in six replicates for SET-1 and SET-2 for 2 hours exposure.
- The absorbance of each concentration of only FGA and DGA was also taken respectively.
- The plate was incubated for 2 hours exposure at 37°C at 5% CO₂. After incubation, 20µl aliquots of MTT solution (5mg/ml PBS) were added to each well of SET-1 and SET-2.
- The plate was re-incubated for 2 hours at 37°C. Then 100µl of dimethyl sulfoxide (DMSO) was added to each well to dissolve formazan crystals followed by overnight incubation.
- The culture plate was then placed in an Enzyme Linked Immune Sorbent Assay (ELISA) microplate reader and absorbance was read at 600nm after 24 hours for SET-1 and SET-2.
- The readings are noted, analyzed by making due adjustment with these data the in vitro effect of FGA and DGA on Human PBL was calculated.
- Cell viability rate was calculated as the % of formed formazan crystal during experiment as follows:

\[
\% \text{ survival} = \frac{\text{Mean experimental absorbance} \times 100}{\text{Mean control absorbance}}
\]

Results

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Cell viability%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Concentrations of GA</strong></td>
<td><strong>FGA</strong></td>
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<tr>
<td>CTRL</td>
<td>100.00</td>
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<tr>
<td>100%</td>
<td>163.98</td>
</tr>
<tr>
<td>70%</td>
<td>161.53</td>
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<td>40%</td>
<td>102.81</td>
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<td>10%</td>
<td>93.31</td>
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<tr>
<td>1%</td>
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</table>

Effect of FGA on Human PBL
The cell viability% on FGA exposed group at 100% and 1% was found to be 163.98 and 107 respectively. FGA also showed positive effect with other concentrations (70%, 40%, and 10%) on cell viability% as compared to control (ctrl) group (Table 1). The trend showed the concentration of FGA was directly proportional to the cell viability% (Figure 2)
Effect of DGA on Human PBL

The cell viability% on DGA exposed group at 100% and 1% was found to be 83.91 and 98.72 respectively. DGA also showed positive effect on cell viability% when treated with other concentrations (70%, 40%, and 10%) as compared to ctrl group (Table 1). The trend showed the concentration of DGA was directly proportional to the cell viability%. (Figure 3)

Overall cell viability% caused by FGA was found to be 121.44%, while due to DGA it was 96.03% which is very close to ctrl. (Figure 1)

When we compared cell viability% on human PBL after the exposure of FGA and DGA for 2hrs, we found that FGA enhanced the cell viability% as compared to DGA (Figure 4). DGA was not found to be toxic while FGA enhanced the viability of Human PBL when treated in vitro. However, the difference was not found to be significant. (Table 2)

Discussion

Gulhane H et al (14) after analyzing different results on GA in various research articles observed that GA and its mixture was a multidimensional drug. It has been mentioned in the Ayurveda that FGA of indigenous cow is the most potent to be used as a drug.

Talokar OW et al (15) described that oral supplementation with the GA prevented painful, time-consuming and expensive difficulties of Hemorrhoids. (15)

Randhawa GK (8) studied, chemotherapeutic potential of cow urine in a review. A significant effect in wound healing activity in Wistar albino rats was found.

Table 2: Two-way ANOVA for analysis of FGA and DGA

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
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<td>579.9678</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Total</td>
<td>7433.96</td>
<td>11</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Figure 1: Overall impact of FGA and DGA on Human PBL

Figure 2: Effect of FGA on Cell Viability %

Figure 3: Effect of DGA on Cell Viability

Figure 4: Comparison of cell viability% between FGA and DGA
The use of GA. They observed that GA heals wound faster 1% w/w than nitrofurzone ointment locally.

In various Ayurvedic formulations, various properties and activity of GA have been applied and widely used. Lashunadhghrita, Panchagavyagdhrita, Siddhartakghrita are used for abdominal pain and psychiatric illness. The formulations of drugs like Darvighrita, Mandurvatak and Punnarvamandur contain GA which is an adjuvant along with Swarnmakshikbhasma’ Hareetakyadiyog, Gvakshyadichurana, Swarnkshiryadyog. The Bhasms, Yogs, and Churans are available in the powder form and Ghritas (Medicated cow Ghee) are also available as semisolid substance. The guiding principal of Ayurveda is the use of herbs and minerals (like Panchagavya and Chavanprash) for improving the overall resistance of the body against common infections and pathogens. Ancient Ayurvedic treatises described that daily consumption of GA increases the resistance to diseases by up to 104%. Mice have also been experimented to show the enhancement in humoral and cell-mediated immune response. (4)

Dhama K. et al (16) has found that though modern medicine has helped to treat numerous diseases of human and animals yet the existing incurable diseases like diabetes, rheumatoid arthritis, acquired immunodeficiency syndrome (AIDS), cancer, side effect of allopathy medicines, increasing trends of antibiotics resistance and chemical and biopesticides causing dietary risk have made the condition more serious than ever before. So, now the scientists are to develop novel therapies. GA has shown minimum adverse reaction when compare to modern medicines GA has been proven to be the cost effective too.

GA showed curable effects against restoration of compromised renal function and renal calculi. Perhaps this reaction of GA was observed as it reduces excretion of calcium oxalate and inhibits process of crystallization. Experimental studies can be designed to its mechanism of action. (17)

The GA is one of the ingredients of ‘Panchagavya’ which is capable of treating many curable as well as incurable diseases. It has been used in Ayurvedic preparations since time immemorial as cited in ancient holy texts like Sushruta Samhita, Charaka Samhita, Vridhabhagabhath, Bhavaprakash, Rajnighantu, Atharva Veda, Amritasagar, etc. (7)

It has been found in studies that GA and distillate inhibited the free radicals by scavenging of Superoxide and DPPH radicals. Comparatively fresh GA was found to be more potent than its distillate. Both Fresh GA and its distillate have showed antimicrobial activity. The activity of Fresh Go Ark (FGA) was similar to that of Ofloxacin. (18)

In our study also we found that FGA was more effective than DGA when tested on human PBL in vitro.

**Conclusion**

We found the proliferative effect of GA on Human PBL, when compared to controls. FGA was found more potent to enhance cell viability% as compared to DGA. However both were competent to enhance the cell viability%. It has been traditionally believed as an elixir of life since ancient time in India. We recommend the use of FGA on daily basis for great potency of normal cells and good health.

**Acknowledgement**

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**References**


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