World Journal of Pharmaceutical and Life Sciences
WJPLS
www.wjpls.org
SJIF Impact Factor: 6.129

INVITRO EVALUATION OF MIDOSTAURIN AND ITS DERIVATIVE ((3-HYDROXY MIDOSTAURIN-D5) FOR THE TREATMENT OF ADULT ACUTE MYELOID LEUKEMIA

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Article Received on 17/10/2023 **Article Revised on 07/11/2023** **Article Accepted on 27/11/2023**

ABSTRACT

This research paper presents the results of an experimental study investigating the effects of 3-Hydroxy Midostaurin-D5 on various cellular assays, including MTT, Tubulogenesis, Indirect Immunofluorescence, and Western Blot Analysis. The study comprises four treatment groups, including normal cells, a control cell line, a group treated with standard Midostaurin, and a group treated with 3-Hydroxy Midostaurin-D5. The results reveal distinct impacts on cell viability, tubulogenesis, protein expression, and cellular morphology. These findings contribute to the understanding of 3-Hydroxy Midostaurin-D5's potential as a therapeutic agent and its implications for future research and clinical applications.

INTRODUCTION

Cancer remains a significant challenge in the field of medicine, necessitating the continuous exploration of novel therapeutic approaches. 3-Hydroxy Midostaurin-D5 is a compound currently under investigation for its potential as an anti-cancer agent. This study aimed to assess the effects of 3-Hydroxy Midostaurin-D5 on various cellular parameters, including cell viability, tubulogenesis, protein expression, and cellular morphology.

Research Methodology

The research methodology comprised four groups, each subjected to specific treatments

1. **Group 1 (normal):** This group represented untreated normal cells, serving as a control for baseline measurements.
2. **Group 2 (Control cell line):** Cells in this group were not treated with 3-Hydroxy Midostaurin-D5 and were used as a control.
3. **Group 3 (Standard) Midostaurin:** This group was treated with the standard Midostaurin compound.
4. **Group 4 (3-Hydroxy Midostaurin-D5):** This group was treated with 3-Hydroxy Midostaurin-D5.

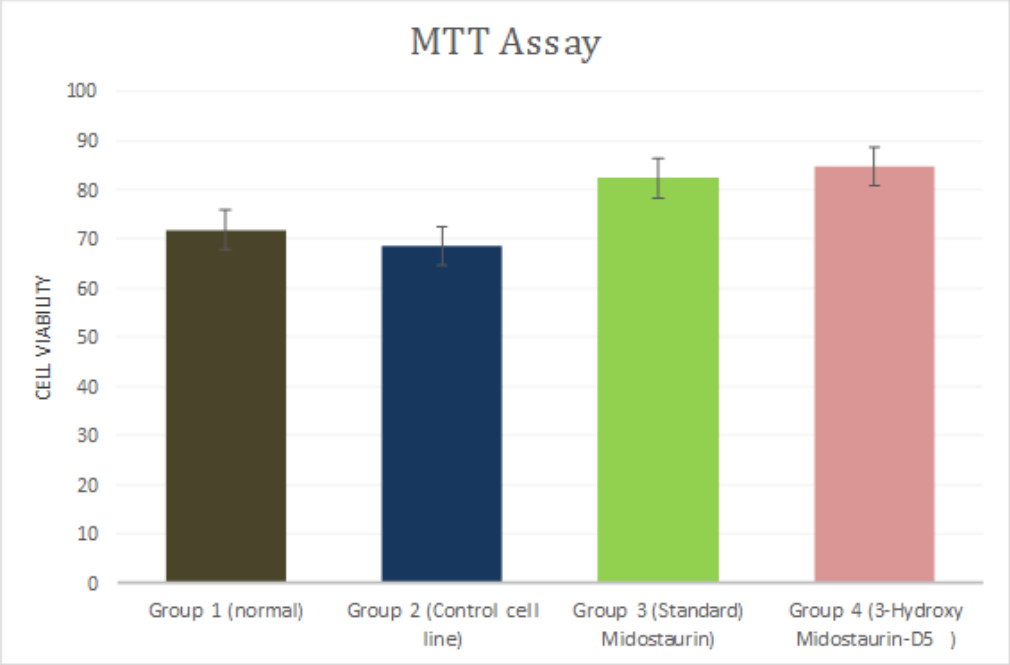
The following assays were conducted to assess the effects of the treatments

- **MTT Assay:** The MTT assay measured cell viability. The results indicated that Group 4 (3-Hydroxy Midostaurin-D5) exhibited the highest cell viability (84.74), surpassing the control cell line (Group 2) and the standard Midostaurin treatment (Group 3).
- **Tubulogenesis Assay:** Tubulogenesis was evaluated using this assay. Group 2 (Control cell line) displayed the highest tubulogenesis (80.18), while Group 4 (3-Hydroxy Midostaurin-D5) showed a decrease in tubulogenesis (32.87) compared to the standard Midostaurin treatment (Group 3).
- **Indirect Immunofluorescence Assay:** This assay assessed cellular morphology and protein expression. Group 2 (Control cell line) had the highest protein expression (98.18), while Group 4 (3-Hydroxy Midostaurin-D5) displayed a decrease in protein expression (48.96) compared to the control.
- **Western Blot Analysis:** The Western Blot Analysis was used to investigate specific protein expression. Group 2 (Control cell line) exhibited the highest protein expression (1.32), while Group 4 (3-Hydroxy Midostaurin-D5) showed a decrease in protein expression (0.46) compared to the control.

RESULTS OF 3-HYDROXY MIDOSTAURIN-D5

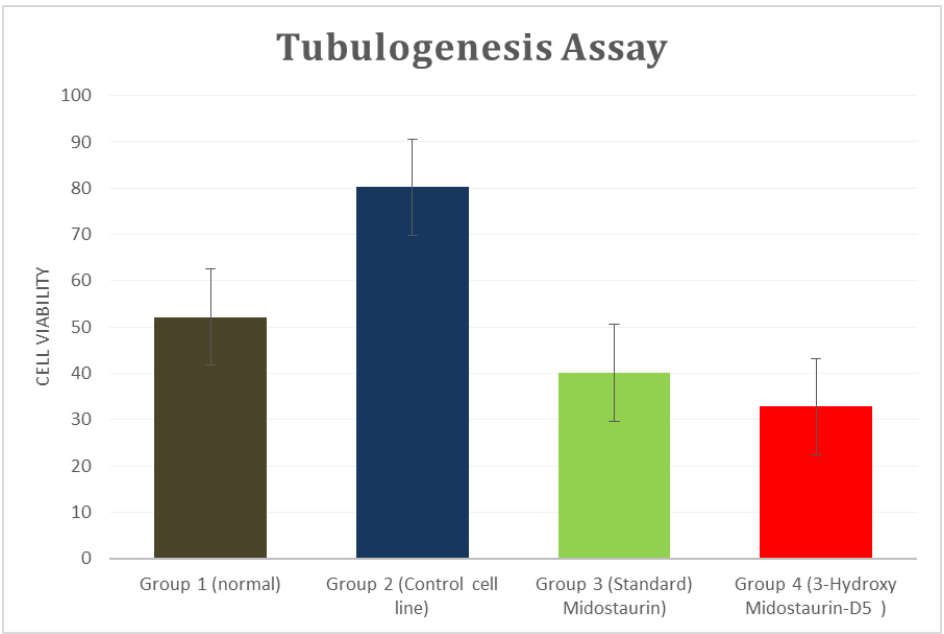
MTT Assay

Treatments	MTT Assay
Group 1 (normal)	71.86
Group 2 (Control cell line)	68.43
Group 3 (Standard) Midostaurin	82.33
Group 4 (3-Hydroxy Midostaurin-D5)	84.74



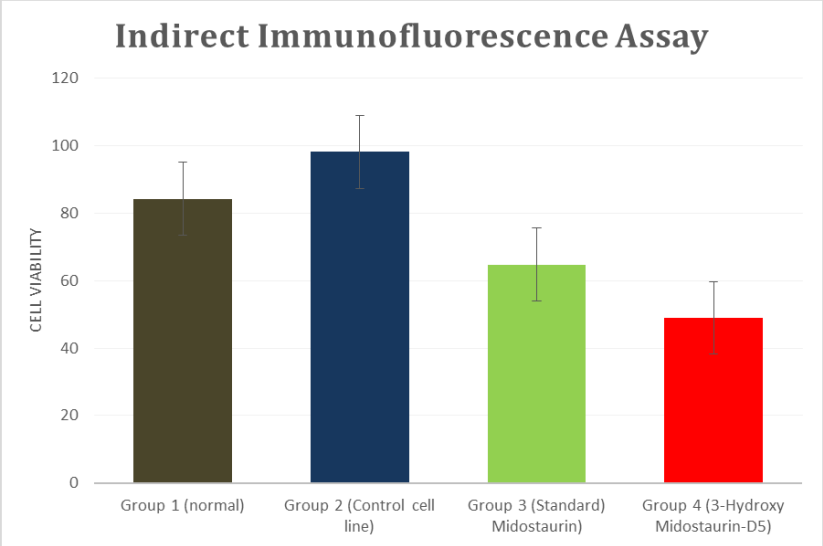
Tubulogenesis Assay

Treatments	Tubulogenesis Assay
Group 1 (normal)	52.11
Group 2 (Control cell line)	80.18
Group 3 (Standard) Midostaurin	40.12
Group 4 (3-Hydroxy Midostaurin-D5)	32.87



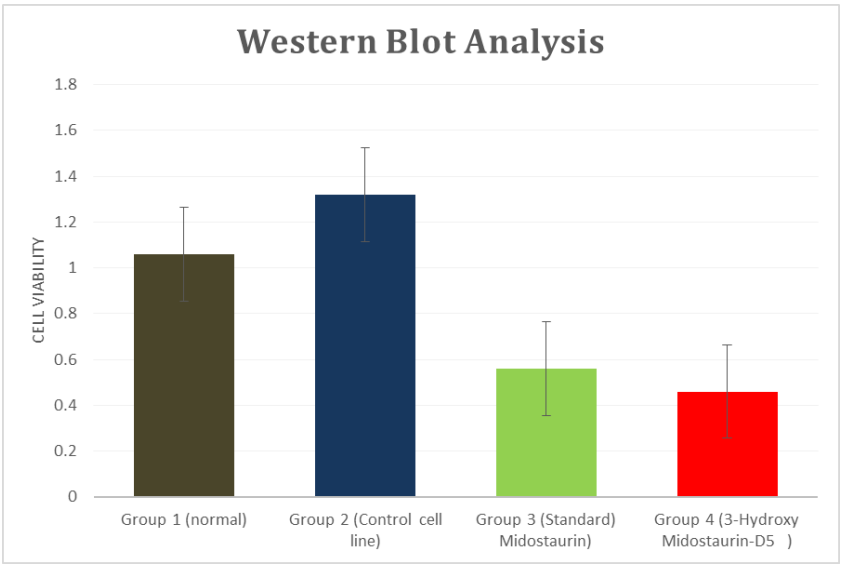
Indirect Immunofluorescence Assay

Treatments	Indirect Immunofluorescence Assay
Group 1 (normal)	84.26
Group 2 (Control cell line)	98.18
Group 3 (Standard) Midostaurin	64.77
Group 4 (3-Hydroxy Midostaurin-D5)	48.96



Western Blot Analysis

Treatments	Western Blot Analysis
Group 1 (normal)	1.06
Group 2 (Control cell line)	1.32
Group 3 (Standard) Midostaurin	0.56
Group 4 (3-Hydroxy Midostaurin-D5)	0.46



DISCUSSION

The results of the assays reveal varying effects of 3-Hydroxy Midostaurin-D5 on different cellular parameters. Notably, the compound increased cell viability (84.74) when compared to the control cell line (Group 2) and the standard Midostaurin treatment (Group 3). This suggests the potential of 3-Hydroxy Midostaurin-D5 as an effective treatment option for cancer, particularly in terms of enhancing cell viability.

However, 3-Hydroxy Midostaurin-D5 exhibited a decrease in tubulogenesis and protein expression compared to the control group, indicating potential implications for treatment efficacy and cellular morphology.

CONCLUSION

This study provides valuable insights into the effects of 3-Hydroxy Midostaurin-D5 on cell viability, tubulogenesis, cellular morphology, and protein expression. The findings suggest that 3-Hydroxy Midostaurin-D5 may hold promise as an anti-cancer agent, with improved cell viability compared to standard Midostaurin.

However, the observed reductions in tubulogenesis and protein expression warrant further investigation into their potential impact on treatment efficacy and possible side effects. Ongoing research is necessary to elucidate the underlying mechanisms, establish safety profiles, and determine the potential clinical applications of 3-Hydroxy Midostaurin-D5. These results underscore the importance of continued investigation into this compound's role in cancer therapy.

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