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Hydroponic Barley and Sustainable Economics: A Feasibility Study of Hydroponic Barley Cultivation

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Abstract: This study aimed to investigate the economic feasibility of establishing a green Hydroponic Barley production facility in Jableh, Syria, utilizing hydroponics for animal feed. The production method involves two stages. The first stage is the preparation of barley grains for germination, which are then soaked in water for a short period, the leaching of materials from the seeds reaches its peak at the beginning of water imbibition and ceases after one day. The leached materials consist of proteins, amino acids, sugars, and organic acids, The second stage is germination, which involves placing the soaked grains, after their removal from the water, in shallow trays within specialized germination units where the necessary germination conditions of irrigation, temperature, and humidity are provided.

Employing several economic indicators, and following data analysis, the results demonstrated that the Hydroponic Barley production project is economically viable. The revenue-to-cost ratio (with an appropriate discount factor) reached 1.66, exceeding 1, and the Internal Rate of Return (IRR) was 56.1%, a favorable figure compared to bank interest rates. The significance of this project stems from its ability to secure Hydroponic Barley throughout the year, particularly in light of the limited availability of large agricultural landholdings.

Keywords: Barley; hydroponic Barley; hydroponics; economic efficiency; economic indicators; internal rate of return.

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1. Introduction

Agricultural crops are a fundamental element in livestock nutrition, which in turn constitutes one of the most significant components of agricultural development. Recently, there has been a growing emphasis on researching feeding methods that ensure maximum production rates at the lowest possible cost. It is noteworthy that Syria, similar to other developing nations, has consistently imported fodder materials to bridge the deficit, not only for poultry but also for ruminants. These imports have increased significantly, placing a substantial burden on the national economy, with the extent of this burden fluctuating annually (Karawally and Sobh, 2008; Al-Yassin, 2008)

Furthermore, due to the absence of clear strategies guaranteeing specific policies for fodder production, the deficit in fodder production has persisted. The 2005 fodder budget revealed a considerable shortfall of approximately 17% in dry matter, 44% in metabolic energy, and 54% in digestible protein (ACSAD, 2008). Importation has continued to cover the needs of livestock, with the Fodder Corporation estimating these requirements at around 12 million tons annually, while its own production only reaches one million tons. The remainder is subject to import from abroad at elevated prices, as the material's cost is linked to global prices and the dynamics of international market exchanges (Ben Salem et al., 2005).

It is also essential to point out that the development of feed resources necessitates the establishment of a comprehensive and integrated scientific plan, aligned with the livestock production development plan. This plan should ensure tangible progress in the production of traditional feed materials (grains, legumes, etc.), the exploration of non-conventional alternatives, and the utilization of plant and animal agricultural residues whose natural, nutritional, and economic properties can be harnessed for animal feeding. This can be achieved either in their natural state or after undergoing necessary treatments to enhance their nutritional value. This approach will contribute effectively to resolving the feed shortage problem on one hand, mitigating the harmful environmental impacts of these residues, and reducing feed imports on the other (Alkhafaji, 2011).

Small and medium-sized enterprises (SMEs) are considered an effective instrument for the advancement and revitalization of national economies, particularly in developing countries, owing to their flexibility and adaptability. This enables them to achieve economic development at the community level by generating profits for individuals and investors. In general, developing countries face significant challenges concerning food security, with a prominent issue being the scarcity of animal proteins (dairy and meat derivatives) resulting from feed shortages, coupled with a substantial increase in their prices. Moreover, the lack of Hydroponic Barley has played a major role in the decline in the quantity and quality of animal products and the emergence of numerous health problems in livestock herds (Al-Taweel, 2012).

Given the limited availability and fragmentation of large agricultural landholdings in Syria, particularly in Latakia, coupled with scarce water resources, hydroponics emerges as a promising solution for ensuring food security. It significantly reduces the need for extensive land areas and offers considerable savings in time, effort, and water consumption. Furthermore, hydroponics aligns with global trends towards smart vertical farming, positioning it as a strategic option for achieving sustainable food security within the country.

In this context, we decided to include a study on the economic feasibility of a proposed micro-enterprise engaged in soilless barley cultivation. The aim is to highlight the importance of micro-enterprises in reducing the costs associated with conventional agriculture while achieving production levels that allow for the development of animal products and a reduction in imports

2. Materials and Methods

2.1. Experimental site:

This study was conducted on the Syrian coast, specifically in the village of Hmeimim (coordinates: 35°24′07″N, 35°55′53″E), located 19 kilometers from the city of Latakia at an elevation of 48 meters above sea level. This region is characterized by minimal daily and annual temperature fluctuations and the complete absence of frost at sea level. Annual precipitation reaches 800 mm at sea level, classifying the climate zone as hyper-humid Mediterranean. The Imberger coefficient (Q) value exceeds 100, indicating an average annual rainfall of not less than 800 mm

2.2. Time period of research:

The data were collected in 2021

2.3. *Research Material:*

2.3.1. Infrastructure and spaces:

The facility infrastructure comprises a building encompassing a 150 square meter area for office and warehousing purposes, along with a dedicated 50 square meter room that has been equipped for operational activities. Furthermore, a separate 50 square meter cultivation room requires the installation of four moisture-resistant aluminum tray holders, each configured with seven tiers to maximize vertical space utilization

2.3.2. Operational Equipment and supplies:

Operational requirements include 280 stainless aluminum trays, each measuring 30 cm by 70 cm, to be distributed across the four tray holders, utilizing ten shelves in total. The establishment also necessitates three small plastic barrels for various storage needs. The cultivation room will be equipped with four 1-horsepower stainless steel pumps integrated with a comprehensive irrigation network. Environmental control within the cultivation room will be maintained by an air conditioning unit, while two air extractors will regulate air exchange. Illumination will be provided by four neon lamps designed for effective use in humid environments. Finally, the barley seed requirement is 143 kg for every ton of barley produced, with the ACSAD 176 variety being specified for cultivation.

2.4. *Economic analysis:*

Economic analysis and economic feasibility study as a kind of cost-benefit analysis using some economic indicators (Khaddam, 2000; Maarouf, 2003):

2.4.1. Annual net profit:

$$\text{Annual Net Profit} = \text{Annual Gross Revenue} - \text{Annual Total Costs}$$

2.4.2. Return on Investment (ROI) Payback Period:

Payback period is the time in which the initial outlay of an investment is expected to be recovered through the cash inflows generated by the investment. It is one of the simplest investment appraisal techniques. Projects having larger cash inflows in the earlier periods are generally ranked as successful projects (Peter and Alexei, 2011).

$$\text{ROI} = \frac{\text{Total Capital Investment}}{\text{Annual Net Profit}}$$

2.4.3. Cost of cultivation:

Benefit-cost analysis (BCA) is a technique for evaluating a project or investment by comparing the economic benefits of an activity with the economic costs of the activity (Gerald, 2012).

$$\text{Cost of Cultivation} = \frac{\text{Annual Total Costs}}{\text{Annual Production Volume}}$$

2.4.4. Economic efficiency:

Economic efficiency is the main qualitative factor of economic growth, it is a term used to estimate the results of an economic activity comparing to the efforts involved in the respective activity (Marinela, 2011).

$$\text{Economic Efficiency} = \frac{\text{Annual Output Income}}{\text{Annual Output Cost}}$$

2.4.5. Net present value (NPV): (Jory et al., 2016)

Net present value (NPV) = Net present value of revenue - Net present value of costs

2.4.6. Benefit cost ratio:

Is a technique for evaluating a project or investment by comparing the economic benefits of an activity with the economic costs of the activity (Boardman et al., 1996). The benefit cost ratio was worked out by following the equation

$$\text{Benefit: Cost ratio} = \frac{\text{Gross Income}}{\text{Total Costs of Cultivation}}$$

2.4.7. The internal rate of return:

This standard is represented when the present value of revenues equals the present value of costs, it is the discount rate that makes the net present value of an investment exactly equal to zero (Carlo, 2010).

$$\text{IRR} = a + \frac{\text{NPVa}}{\text{NPVa} - \text{NPVb}} \times (b - a)$$

3. Results

Hydroponic barley sprouting is of increasing significance for several fundamental reasons, particularly given the challenges facing the livestock sector and traditional agriculture. Hydroponics enables the continuous production of fresh and nutritious Hydroponic Barley, irrespective of climatic or seasonal conditions. This ensures a consistent food supply for animals, reducing reliance on conventional feeds that can be affected by drought or price fluctuations.

According to (Shipard, 2005), it was mentioned that sprouted seeds contain digestive enzymes for proteins, carbohydrates, and fats. Moreover, these seeds surpass dry seeds in the abundance of vitamins E and D, as demonstrated by the study of Chavan and Kadam in 1989. Table (1) below illustrates the quantity of vitamins present in Hydroponic Barley:

Table 1. below illustrates the quantity of vitamins present in 6-day-old Hydroponic Barley (mg /kg dry matter):

Type	Dry barley seeds	Green Barley
Vitamin E	7.2	62.4
Beta-carotene (Beta-carotene)	4.1	42.7
Caffeine (Biotin)	0.16	1.15
Folic acid (Free folic acid)	0.12	1.05

Source: Cuddeford 1989

Although the initial capital expenditure and operational expenses associated with enclosed growth chambers may exceed those of greenhouses, the implementation of environmentally controlled rooms with tailored lighting is deemed a superior methodology for the cultivation and sprouting of barley when contrasted with greenhouse environments. The meticulous regulation of environmental variables, the provision of robust protection against pests and diseases, the efficient allocation of resources, and the resultant enhancements in both productivity and final product quality render this approach a more strategically advantageous long-term solution for barley cultivation and sprouting, particularly within commercial frameworks prioritizing consistent, high-grade output. Moreover, within the context of fragmented agricultural land ownership and the multifaceted challenges confronting conventional agricultural practices, barley sprouting within controlled environment rooms presents itself as an innovative and efficacious resolution. This methodology facilitates elevated productivity within reduced spatial parameters, affords enhanced control over critical environmental parameters, ensures judicious resource management, and yields sustainable, high-caliber production, thereby establishing it as a pivotal strategic choice for ensuring a reliable supply of Hydroponic Barley and fostering improvements within the livestock sector.

The cultivation of barley through controlled environment agriculture represents a contemporary and sophisticated technology for the production of Hydroponic Barley, a practice that has acquired particular significance within our region due to prevailing limitations in conventional fodder production. It is well-established that animal feed costs can constitute as much as 75% of the total expenditure in sheep fattening initiatives (Abu Omar et al., 2012). Hydroponic Barley is derived from grains exhibiting high germination rates, sprouted over a condensed timeframe within specialized chambers engineered to provide optimal growth conditions (Sneath and Mclntosh, 2003; Abu-Shamala, 2012). Numerous sources indicate that the attainment of 10 kg of fresh Hydroponic Barley is contingent upon the specific seed variety employed and the prevailing germination conditions, with the resultant height of the green mat, inclusive of the root system, typically ranging between 15 and 30 cm (Fazaeli et al., 2012; Al-Ajmi et al., 2009; Buston et al., 2002).

1- The economic importance of Hydroponic Barley cultivation:

This is a hypothetical production project involving the hydroponic cultivation of barley as animal fodder. It represents a commercial agricultural activity that yields Hydroponic Barley as green feed year-round. Livestock farmers benefit from this project, as Hydroponic Barley enhances animal production in terms of both milk and meat, with studies indicating an increase in animal production ranging from 20-25% (Khleel & Ali, 2024). To illustrate the economic significance of Hydroponic Barley cultivation, it is essential to cite examples of the economic importance of using sprouted Hydroponic Barley in the nutrition of cows and sheep, given their prevalent economic use in livestock farming within the Syrian Arab region. A cow producing an average of approximately 20 kg of milk daily requires about 12.5 kg of concentrated feed, excluding hay. Considering that the price of one kilogram of concentrated feed is $0.5, equating to a minimum daily cost of around $6.25, this results in an annual concentrated feed cost of $2281 per cow.

Conversely, when utilizing sprouted Hydroponic Barley for feeding cows, a cow producing about 20 kilograms of milk per day requires a maximum of 35-40 kilograms of Hydroponic Barley daily (noting its gradual introduction into the cows' diet upon initial use). Cultivating this quantity of

Hydroponic Barley (40 kilograms) necessitates approximately 6 kilograms of barley seeds for germination. With the price of one kilogram of barley seeds being around $0.4 USD, the annual cost amounts to 0.4 × 6 × 365 = $876 USD. Consequently, the annual feeding cost per cow is only about $876. Therefore, we can conclude that using hydroponically grown Hydroponic Barley for feeding cows results in an annual cost saving of $1405 per cow, in addition to savings derived from reduced morbidity and metabolic issues arising from malnutrition, such as toxins, ketosis, milk fever, voracity, displaced abomasum, and deficiencies in certain vitamins naturally present in Hydroponic Barley (Musa, 2016). Furthermore, hydroponic barley (HB) in its various forms has shown positive effects on the health status of ewes, mortality rates, pregnancy rates, and abortions. In conclusion, HB in any form can be used as feed for lactating ewes, where feed costs can be reduced by 42% using HB (Saidi, 2014).

2- Studying the economic feasibility of establishing a facility to grow Hydroponic Barley in trays without soil, and use it as food for animals:

Barley stands as a significant food crop across numerous nations, owing to its resilience to both extreme cold and moderate heat, factors that have facilitated its widespread cultivation globally. Initially utilized as a concentrated fodder source (in grain form), barley subsequently found application in the silage industry. Its cultivation is currently experiencing substantial growth within the global market, driven by its potential to generate favorable profits and a rapid return on invested capital, with a harvest cycle of approximately seven days. Furthermore, barley exhibits notable resistance to prevalent pests and diseases. Agricultural projects, in general, are recognized as critical catalysts for economic enhancement, often possessing a familial dimension that allows for the collaborative involvement of all family members in the project's operation and management. Consequently, this study endeavors to assess the economic feasibility of establishing a Hydroponic Barley cultivation facility within the Syrian coastal region. Data acquisition involved market analysis and engagement with relevant companies in the study area through field surveys and the interpretation of pertinent data tables. Financial analysis was conducted by considering investment costs, operational expenditures (covering goods and services), and projected revenues, with the aim of determining the net present value of the project's cash flow, a key indicator of its overall financial viability.

3.1. Investment costs (Establishment):

Investment costs include the price of the land on which the project is built, the cost of buildings, the germination unit and its components, the costs of constructing a water tank, water pipe extensions, and electricity (Kamara et al., 2017). Table (2) shows the total and annual investment costs of a plant for the production of Hydroponic Barley.

Table 2. The total and annual investment costs for Hydroponic Barley breeding facility (USD).

Component	Total investment costs	Life span (year)	Annual depreciation
Land rent	100	-	100
Building	8330	50	166.6
Tray holders	265	20	13.5
Trays for barley cultivation	700	20	35
Water tank	83	20	4.15
Plastic barrels	99	10	9.9

Pump with irrigation network	200	20	10
Plastic containers	4	2	2
Air conditioner	265	20	13.25
Air suction	60	15	4
Neon lights	12	2	6
Temperature and humidity measuring device	2	5	0.4
Total	10,120		364.8
Capital interest 11%	1113.2		40.1
Petty cash 5%	506		18.2
Total summation	11739.2		423.1

Source: (Prepared by researchers, 2021)

3.2. Operating, production and marketing costs:

3.2.1. Agricultural operations and commodity requirements: It include the following:

Production costs include the value of the barley used, labor wages, and the value of water used in production, while operating costs include the costs of electricity and fuel consumption (Kamara et al., 2017). Table (3) shows the quantity of commodity requirements for the barley breeding facility per year, and their cost.

Table 3. Annual commodity requirements for a Hydroponic Barley breeding facility.

Agricultural operations and commodity inputs	Annual costs
Barley seed	7280
water	6.5
Sterilization materials	-
Electricity	16.5
Sacks and packaging	124.8
Total	7427.8
Capital interest 11%	817
Total summation	8244.8

Source: (Prepared by researchers, 2021)

3.2.2. Labor costs it includes:

Where the establishment needs a permanent worker with a monthly salary of 50 USD.

Table 4. shows the total operating costs, which include commodity and service requirements for the Hydroponic Barley breeding facility:

Operating costs	Annual Costs (Unit USD)
Agricultural operations and commodity requirements	8244.8
Labor costs	600
Total costs	8844.8

Source: (Prepared by researchers, 2021)

3.3. *Revenue and Sales:*

According to studies, the rate of replacement of Hydroponic Barley instead of concentrated feed has reached 1/3 (Musa, 2016; Saidi, 2014), and the price of 1 kg of concentrated feed has reached 0.5 USD, and from it we conclude that the price of 1 kg of Hydroponic Barley = 0.16 USD, the expected revenues of the project are represented by the value of the germinated barley. Based on the production activity of the project, it is clear that the production cycle period is 7 days and therefore the total number of production cycles during the year is 52 production cycles (Kamara et al., 2017), Every 1 ton of barley needs 143 kg of seeds. The facility produces per week 280 x 7 = 1,960 tons of Hydroponic Barley, meaning that it produces in the year 1,960 x 52 = 101,920 tons of barley.

The average production of the establishment in the year is 101,920 kg of Hydroponic Barley, and accordingly we find

→ *The establishment's annual revenue = 101,920 x 0.16 = 16307.2 USD.*

Table 5. shows the annual costs and revenues of the Hydroponic Barley breeding facility and the annual net profit.

Component	Value (USD)
Annual investment costs	423.1
Annual operating costs	8844.8
Annual total costs	9267.9
Annual total revenue	16307.2
Annual net profit	7039.3

Source: (Prepared by researchers, 2021)

3.4. *Economic analysis of the barley breeding facility:*

For the economic evaluation of establishing a barley breeding facility, some economic indicators were selected:

3.4.1. Net annual profit:

Net annual profit = annual gross revenue - annual total costs → Net annual profit = 16307.2 – 9267 = 7039.3 USD.

So, the ratio of profit to annual gross revenue = (16307.2 / 7039.3) x 100 = 43.16%. This percentage is very good and is much higher than the prevailing interest rate in Syrian banks.

3.4.2. From recovering invested capital:

The preparation of this project required investment costs estimated at 11739.2 USD (Table 2)

Time to recover invested capital:

Total investment costs / net annual profit = 11739.2 / 7039.3= 1.6 years, it is a very suitable period of time to recover the invested capital. in light of the net cash flows over the life of the project and the investment costs, the payback period for a similar project in the Kingdom of Saudi Arabia was approximately 2.95 years (Kamara et al., 2017). That period was for another project in Baghdad/Iraq 2 years (Kaleel and Ali, 2024).

3.4.3. The cost of producing 1 kg of barley:

The cost of producing 1 kg of barley = annual total costs / annual production quantity = 9267 / 101,920 = 0.09 USD.

3.4.4. Average income per unit of expenditure (total economic efficiency, which is the simple rate of return):

Average income per unit of expenditure = annual total revenue / annual total costs = 16307.2 / 9267 = 1.75 USD.

It is exceeded by the correct one, which indicates the feasibility of the project.

3.4.5. Accounting rate of return:

Accounting rate of return = (Annual Gross Revenue/Annual Total Costs) x 100 = (16307.2 / 9267) x 100 = 175 %.

This is a good percentage, and it reflects the economic feasibility of the project, as it exceeded 100%.

3.4.6. Net Present Value:

NPV (at appropriate discount factor) = Total NPV of Revenues - Total NPV of Costs.

Considering that the discount factor: It is a fixed number that circulates, and it is an intermittent number of cash flows to give the correct values for the values of the flows over the years of the project (i.e. the time value of cash flows), which is calculated from the following transaction:

Discount coefficient = 1 / (1 + m) n

m = interest rate or discount rate

n = time or years from 1, 2, 3....etc

Table 6. Present value of annual costs and revenues at a discount factor of 10% (unit: USD)

Year No.	Total costs	Total revenues	Discount factor of 10%	Present value of costs at a discount factor of 10%	Present value of revenues at a discount factor of 10%	Net present value
0	11739.2	0	1	11739.2	0	-11739.2
1	9267	16307.2	0.909	8423.703	14823.2448	6399.5418
2	9267	16307.2	0.826	7654.542	13469.7472	5815.2052
3	9267	16307.2	0.751	6959.517	12246.7072	5287.1902
4	9267	16307.2	0.683	6329.361	11137.8176	4808.4566
5	9267	16307.2	0.621	5754.807	10126.7712	4371.9642
Total				46861.13	61804.29	14943.16

Source: (Prepared by researchers, 2021)

→ NPV (after 5 years at 10% discount rate) = 61804.29 – 46861.13 = 14943.16 USD.

Since the net present value has a positive value, this indicates that the project is economically feasible.

3.4.7. Revenue / Cost Ratio (Profitability Index):

Revenue to costs ratio (at appropriate discount factor) = Total current value of revenue / Total current value of costs, and based on Table (5), they are:
Revenue to cost ratio (at an appropriate discount factor) = 61804.29/46861.13= 1.3 The value is greater than 1, which is another proof that the project is economically feasible.

3.4.8. Economic analysis and the present value of cash flows at discount rates of 50% - 60% : Table (7). Shows the revenues and net profit of Hydroponic Barley breeding facility during the six years of this project.

Table 7. Present value of the net cash flow of Hydroponic Barley in a room of 50 m2 (unit: USD)

Year NO.	net profit	Discount factor at 50%	Present value at 50% discount	Discount factor at 60%	Present value at 60% discount
0	-11739.2	1	-11739.2	1	-11739.2
1	7040.2	0.6667	4693.701	0.625	4400.125
2	7040.2	0.4444	3128.665	0.3906	2749.902
3	7040.2	0.2963	2086.011	0.2441	1718.513
4	7040.2	0.1975	1390.44	0.1526	1074.335
5	7040.2	0.1317	927.1943	0.0954	671.6351
6	7040.2	0.0878	618.1296	0.0596	419.5959
Total	30502	-	1104.941	-	-705.095

Source: (Prepared by researchers, 2021)

3.4.9. The internal rate of return:

This standard is represented when the present value of revenues equals the present value of costs, it is the discount rate that makes the net present value of an investment exactly equal to zero (Al-Karaki & Al-Hashimi, 2011).

$$IRR = a + \frac{NPVa}{NPVa - NPVb} \times (b - a)$$

IRR = 50 + [1104.94/ (1104.94 + 705.095)] × (60-50) = 56.1%

Consequently, this project demonstrates the capacity to recoup its initial capital investment and adequately cover both production and operational expenditures (Carlo, 2010). Furthermore, it is projected to yield an additional return or profit of 56.1% on the invested capital, a figure notably exceeding the standard interest rates for long-term loans offered by Syrian banks. This disparity underscores the priority and economic significance of this project as a crucial avenue for stimulating economic growth and augmenting the income of Syrian farmers, especially when considering that the calculated internal rate of return surpasses the global average of 12%. This finding aligns with the results reported by Kaleel and Ali (2024) and is also significantly higher than the internal rate of return of 34.3% reported for a barley cultivation project in the Kingdom of Saudi Arabia (Qamra et al., 2017).

Considering the findings of various research and studies, it can be generally concluded that the production of Hydroponic Barley has experienced a decline and achieved negative growth rates, primarily due to rainfall scarcity and low water table levels. The escalating rise in fodder prices has also exerted a detrimental impact on the development of the livestock sector (Kaleel and Ali, 2024). Therefore, the barley germination project, which aims to ensure a consistent supply of Hydroponic Barley throughout the year, is a venture that is congruent with sustainable development plans and the strategic directives of the Food and Agriculture Organization of the United Nations (FAO).

4. Conclusions:

The Hydroponic Barley breeding project is economically feasible, Hydroponic Barley is important as a food for livestock, as it can be adopted in the animal feeding system by replacing it with other imported fodder. There is a positive correlation between the use of Hydroponic Barley and the cost of raising livestock, as feeding animals with it contributes to lower costs in general, which in turn is reflected in the prices of its products to the consumer, also the production of sprouted Hydroponic Barley as a source of Hydroponic Barley is an economic process that contributes to solving many problems of fodder provision, especially in drought years. The production of sprouted Hydroponic Barley contributes to solving the problem of food security and water security in terms of providing large areas of agricultural land and irrigation water for other crops. This project is also insensitive to changes in investment, operating costs, and production prices. It has high safety limits that make it not afraid of losses in addition to the possibility of increasing its profits during its productive life. Therefore, the study recommends the necessity of establishing such projects due to the economic feasibility of Hydroponic Barley cultivation projects on the one hand, and its role in providing fodder for the livestock sector, and the use of Hydroponic Barley and its gradual introduction into livestock feed due to its high nutritional value and its benefits that are reflected in animal health, as indicated by most studies and reference.

Author Contributions:

The work was supervised by Dr. Ghaith, And the work was a collective effort between the two researchers in terms of collecting data and information, representation, discussion, and reaching results." All authors have read and agreed to the published version of the manuscript."

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Conflicts of Interest:

The authors declare no conflict of interest

Data availability statement:

I declare my data and datasets available.

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