

**Title:**

**Fake Drug Detection to Combat  
Counterfeit Drugs**

# CONTENTS

1. Introduction .....	03
2. Problem Statement & Objectives.....	03
3. Literature Survey.....	04
4. Technology.....	05
5. Proposed Work .....	05
6 Applications.....	08
7. Conclusion.....	08
8. References.....	09

## **1. Introduction**

Counterfeit and fake drugs can have a serious issue on health of humans. In 2017, the World Health Organization analyzed drug samples and found that 10.4 percent of pharmaceutical drugs in low and middle-income countries are fake. Many organizations focus the drawbacks of fake medicines for patients as well as the challenges by this form of unlawful trade for governments and health care organizations. Thus, there is need to implement a blockchain based software that will help to maintain the history of medicines. The modern trade for governments and health care organizations.

The trend has only been amplified by the current health emergency created by COVID-19, with people worried about how to cope up with this new unknown hazard, which still has features of Blockchain makes it efficient in giving a basis for complete findability of medical drugs from manufacturer to final patients, and the ability to recognize counterfeit medicines or drugs. It will allow clients to scan a QR code printed on the receipt or medicine in order to analyze from where the medicine has come. In this proposed model we are going to check whether the medicine or drug is fake i.e., injurious to mankind or safe for consumption. We will be creating an application which will help us to know from where the medicine has come i.e., manufacturer, wholesaler and finally the patient. This will help us to know in a better way whether the medicines are safe or not. This will also help to detect the fraud drugs and the rackets or say companies who are producing fake medicines and selling those at cheaper rates. This will also create awareness among society for not consuming medicines at cheaper rates as they can be fake and hazardous to mankind. This will save the environment as well as mankind from being destroyed.

## **2. Problem Statement & Objectives**

Day by day, the manufacturing of fake drug is increasing. This is consumed by the citizens and can cause major health issues. This is very dangerous for mankind. To overcome this problem IT sector plays a vital role. Every drug should have a QR code on it. QR code is a Quick Response Code which once scanned allows user to access the information instantly. When the customer will buy medicine, they must check whether the QR code is present on the medicine or not. If present they must scan that code and it should display the details of the product and if the medicine is fake, it will show error. For this detection Blockchain technology is used.

Many countries in the world are suffering from crisis of shortage of medical drugs as well as instruments. In any case they get medicine, we can't guarantee whether it is real or fake until it goes in our stomach. This problem is growing globally. The medicine produced in one country, may be manufactured in other country and packaged in other and sold across the world. The condition may arise like the medicined may be quite expensive, everyone cannot afford it. Many fraud companies take advantage of this situation and start producing those medicines with some low quality or say cheaper products which are not suitable for consumption. And those medicines are even sold in cheaper rates. Consumptions of such medical drugs drastically affects the health of patient. Both generic and private medical drug manufacturer can be fraud. Considering the current scenario of COVID 19 pandemic, many fake drugs come into existence. Like remediciver, due to shortage of this drug, fake companied took advantage of the situation an produced the fake products which looks exactly the same. World Health Organization is taking preventive measures in order to reduce this scam. They have now focused upon prevention and detection of fake medical drugs in order to maintain good health of patients.

## **3. Literature Survey**

### **a) Impacts:**

Fake medicines not only create the problem for the consumer but also for the family, surroundings, society, healthcare sector and the supply management system. When we consume medicine and they don't work according to the way they should work that is they fail to defeat the disease or prevent the disease and they start contributing as a resistance to the antibiotic bodies,

unwanted waste resources and this leads to the loss of faith over medicine and healthcare sector. All this can make a bad impact and eventually lead to the loss of productivity and loss of economy and then it would affect the lives of normal people because of the high expenses. These falsified medicines are mostly to be consumed by the people who live in the regions where there is lack of education, compromised situation for the quality, negligence of government and no technical facilities available. Although this issue affects all countries, the countries where there are no systems carry the burden of counterfeit drugs. In an increasingly globalized world, no one country has sufficient resources and capacity to deal with this problem of isolation. Through global systems and processes such as the World Health Organization Global Surveillance and Monitoring System and WHO Member State Mechanism, Member States are working together to prevent, recognize and respond to defective and fake medical products.

**b) Challenges:**

There are many problems faced by pharmaceutical supply chains when it comes to dealing with fake or substandard drugs, some of these include; Every one faces the problem to find out from where the drug has come i.e., the history of the medical item. The management of all information is involved in the supply chain process. The checking of legal acceptance and verification of the authenticity of the drugs by the retailer. Ensuring the genuineness of a particular drug by the end consumer. A drug which is composed of the wrong additive, the proper active additive at the wrong dose or none of the prescribed active additives then it can be called a falsified drug. There are several factors that influence the fictitious unauthorized medicine in the whole supply chain.

- Ethical issues: Low and middle-earnings international locations have the catch 22 situation of moral issues, the ascendant entities who're accountable to become aware of the substandard medicinal drug have been an immorality.
- Impotent regime rules: The impotent regime rules cause the delivery of a plethora of counterfeit medicinal drug withinside the market.

- Non-availability of medicinal drug: Few pills are fairly uncommon and now no longer to be had to consumers. So, they're compelled to consider the 0.33 party. Current device does now no longer permit everybody to validate the certified drug distributors.

## **4. Technology Used**

### **Front End**

HTML/CSS

### **Back End**

Blockchain

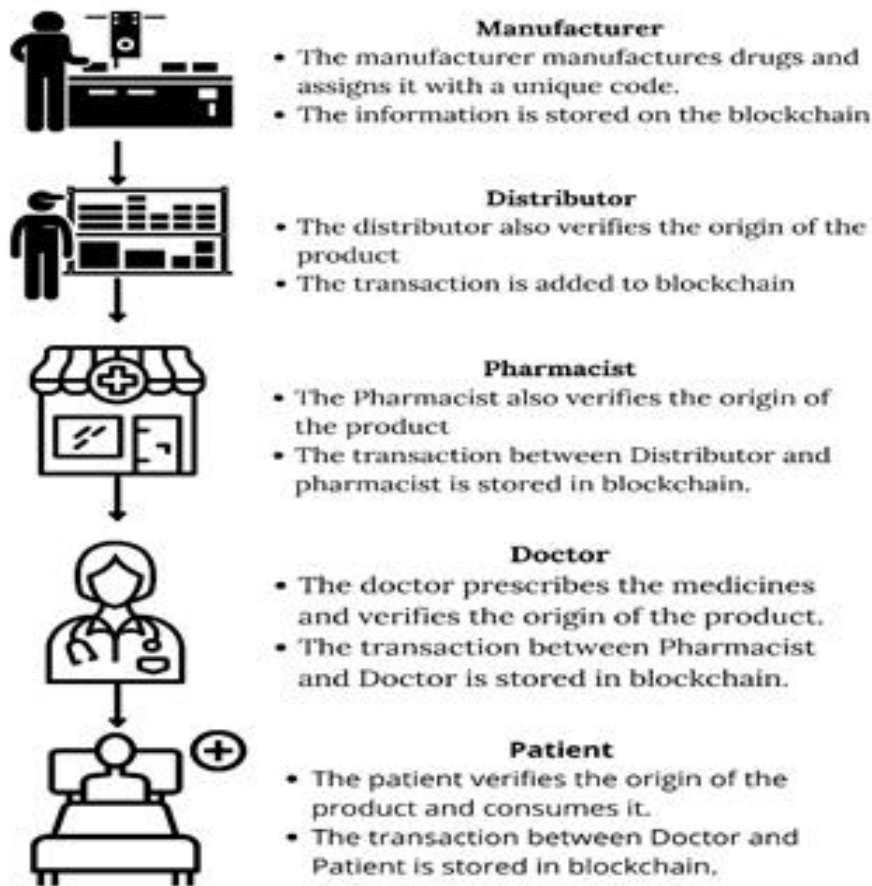
The old drug findability systems are inefficient and lack many requirements for pharmaceutical supply chain Handling. The following issues with general drug findability approaches describes the need of blockchain in drug findability –

1. Problem of Visibility
2. Problem of Regulatory Consents
3. Problem of Cold-Chain Shipping

## **5. Proposed Work**

Blockchain technology consists of chain of blocks that are linked by cryptography. It is based on distributed ledger technology (DLT) which allows users to transmit data amongst one another and cannot be changed without arrangement. This technology provides transparency, traceability, security and quick access to data using a single application. These features build trust among all. Spartech has developed a Pharma chain solution using our own patented S- Blox Blockchain Distributed Ledger Technology platform to help address some of the tasks of counterfeit drugs within pharmaceutical supply chains. Pharma chain will provide full end-to-end traceability of

genuine pharmaceutical drugs from produce through to customer using a secure and fixed platform for sharing and accessing data. Our S-Blox Blockchain DLT platform provides a variety of bespoke features including: Quick transactions and throughput. High throughput and performance. Unique quantum resistant cryptography. Fully customizable process. A flexible and compatible blockchain platform. Our Pharma chain solution will bring many benefits to Pharmaceutical supply chains including: Verification of the genuine drug for each one. Validation of information written by any one on the blockchain. An immutable database. Full traceability and tracking from one end to another one supply chain data will be possible. Access control allow the management of access to data on the Blockchain.



#### Methodology:

Blockchain provides a safe way for participants in the pharmaceutical supply chain (such as manufacturers, consumers, wholesalers, pharmacists, etc.). The blockchain stores every detail of

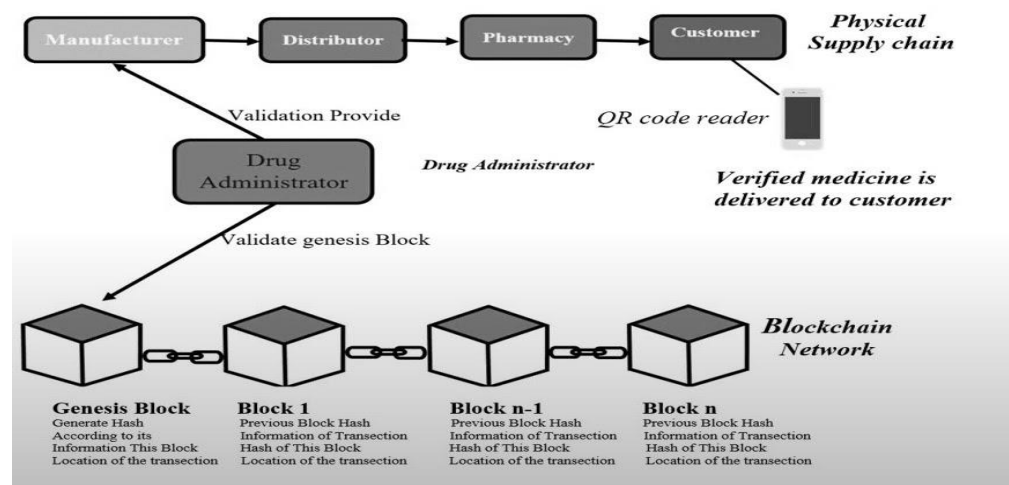
the supply chain. The figure shows the process of a drug discovery system using blockchain. A link that points to a unique hash code for identification. The detailed information of drug production is stored in the blockchain along with the hash code. The distributor first checks the origin of the medicine and its legality, and then saves the transaction in the blockchain. The process of verifying the originality and safety of medicines and storing transactions on the blockchain runs through the entire supply chain from the manufacturer to the end user. This will reduce the problem of counterfeit medicines and make it possible to find counterfeit medicines using blockchain.

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## 6. Applications

1. Health care medicines (Ointment, Syrups, Tablets)
2. Agriculture (Fertilizers)
3. Beauty Products (Face Cream, Shampoo, Lipstick, etc.)
4. Future applications:

Health is a totally crucial zone which incorporates a heap information and approaches to address with fake pills. Blockchain era allows us to truly and securely gain drug findability and information control in clinical care. In this studies paper we mentioned the troubles with conventional strategies for drug findability and information control and the way blockchain overcomes those troubles is likewise mentioned.

## 7. Conclusion:

Blockchain has been eventually evidenced as a hand to health care, which reinforces the method of knowledge management and drug findability to great extent. Still there are several flaws involved these tasks. Counterfeiting of medical medication will be majorly combated by the planned system. The proposed system is in a position to attenuate the propagation of fraud medicines within the healthcare trade to a good extent. But, still there are many options that increase drug counterfeiting. mistreatment this technique of fraud drug detection, we are able to simply acknowledge the pretend drugs which are unsafe to mankind. Not solely drugs however we can identify counterfeit fertilizers, cosmetics, ointments etcetera.

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