Exploration of Unani Concept of *Ghayr tabi'i* dam (Morbid Blood)

[1]*Mushir Ansari,
[1]Nasreen Jahan,
[1]Ghulamuddin Sofi,
[1]Abdul Wadud,
[2]Ghufran Ahmad
and
[3]Mohammed Yasir

[1]Dept. of Ilmul Advia,
National Institute of Unani Medicine,
Kottige Palya, Magadi Main Road,
Bengaluru-560091

[2]Dept. of Ilmul Advia,
A.K. Tibbiya College,
Aligarh Muslim University,
Aligarh-202001

[3]Regional Research Institute
of Unani Medicine,
Old Pharmacology Building,
Sir J.J. Hospital,
Mumbai-400008

Abstract

Hippocrates (460-370 BC) propounded the concept of humours to define the state of health and disease of human body, and classified them in four groups based on their colours. This theory was further disseminated by Galen and Avicenna. Humours in Unani practice are named as *dam* (blood/ sanguine), *balgham* (phlegm), *safra* (yellow bile), and *sawda* (black bile). Each person is considered to have a unique humoral makeup, an admixture of all four humours with an ascendance of one of them which actually acts as the representative of all humours in the body and the person is said to have *damwi*, *balghami*, *safrawi* or *Sawdawi* temperament. Among the four humours, *dam* is considered the most worthy and superior. *Tabi'i dam* (Normal blood) is one in which all humours are in desirable proportion with respect to quantity and quality. It is normal in colour, moderate in viscosity and taste, free from bad odour, sepsis and pepsis etc. *Tabi'i dam* equipoise in quantum and quality guarantees good health. It has been mentioned that *mizāj* (temperament) of organs remain normal only when the nourishing blood is normal. Ancient Unani physicians have described the causes, pathological changes, signs, symptoms and treatment of abnormal blood. In the present paper an attempt has been made to develop a comprehensive understanding of *ghayr tabi'i dam* (morbid blood) and its associated disorders in the light of the descriptions mentioned in Unani literature.

Keywords: Blood, Blood diseases, *Ghayr Tabi'i Dam* (Morbid Blood)

Introduction

Humoral theory is unarguably the backbone of Unani system of medicine. According to this theory, when *dam* (blood), *balgham* (phlegm), *safra* (yellow bile), and *sawda* (black bile) are properly mingled, the body remains in a state of health and when there is dyscrasia or disequilibrium in the mixture, disease arises. *Tabi'i dam* (normal blood) that circulates in the blood vessels is itself considered a specific humor in which the other three humors are mixed in a fixed ratio. As far as blood remains in a balanced state, human body enjoys good health (Tabari, 2010). During the early phase of European renaissance, the humoral concept of disease was criticized fiercely and discarded for being hypothetical. But afterward, certain new facts came to light that brought back an interest in humoral theory. Landsteiner and Garrod instigated scientific inquiry into humoral theory in 1901, and since then the scientific community has devoted a watchful eye on the theory ant its implication (Chishti, 1991).

[1]*Author for correspondence; Email: dr.ansarimushir98@gmail.com

Hematological disorders are frequent in all age groups ranging from very common conditions like deficiency disorder to relatively rare multiple myeloma (Demaeyer *et al*., 1985). The magnitude of benign hematological disorders in India is shocking. Acquired hematological disorders occur due to iron and vitamin deficiency indeed exceeds the congenital causes (Dutta, 2014). In the United States approximately 10,000 deaths were reported due to blood diseases in 2010 (National Institute of Health, 2012). Treatment options for hematological diseases include corticosteroid therapy, blood transfusion, plasmapheresis, surgery, bone marrow cell transplant and life style changes. However none of these treatments alone offer an alternative for the definitive cure for blood diseases; on the other hand majority of treatments have major side effects (Velasco *et al*., 2009). There is no corresponding description of hematological diseases in Unani medicine as categorized in modern medicine but the manifestations of changes occurring in blood, and the clinical sign and symptoms of hematological diseases are majorly comparable to the descriptions entered under the concept of *ghayr tabi'i dam* (morbid blood). The changes in the morbid blood as referred in Unani medicine depend upon different factors therefore the abnormalities of blood are categorized in various ways. Concepts like *Riqqate dam* (decreased viscosity of blood), *ghilzate dam* (increased viscosity of blood), *ufoonate dam* (infection in blood), *hiddate dam* (scorching blood) and *ihteraqe dam* (combustion of blood) are the terminologies used to define the morbid blood. Several reviews detailing the concept of Unani medicine have been published, however; none of them have a good account of disorders of blood. In this review, we have made an attempt to put forward the explanation on various aspects of morbid blood i.e. causes, pathological changes, signs and symptoms and principles of treatment. The authors anticipate providing the readers of this article an understanding of Unani concept of morbid blood in perspective of modern hematological disorders.

Causes of Production of *Ghayr tabi'i dam*

If we go right back to early history, it will be appreciated that various terms such as "thick blood", "thin blood", "too much blood", "too litle blood", "dirty blood", "bad blood" etc. have been commonly used in the ancient manuscripts. Abu Sahal Masihi (960-1000 AD) an eminent scholar of Unani medicine, has mentioned that normal blood is one in which all humours are in normal proportion both in terms of quality and quantity (Kabiruddin, 2009). Proper functioning of stomach, liver, kidney and spleen is necessary for the production of good quality of blood. A well known philosopher Ibn Rushd (1126 –1198 AD.) has described that temperament of organs remains normal when the blood which nourishes them is normal in quantity and quality (Tabari, 2010). Unhealthy food, irregular dietary habit, unhealthy environment, stressing occupation etc. may contribute to produce morbid blood. Foods responsible for blood dyscrasia include salty, spicy and rotten

stuffs etc. (Razi, 1991). People with grueling and stressful job are more prone to acquire blood dyscrasia. Sometimes, a combination of both internal and external causes, leads to the production of humour which is abnormal in terms of both, the quality and quantity (Tabari, 2010).

According to Unani concepts the functional disturbance of liver following a change in its *mizāj* (temperament), affects the production of blood as such and alters its normal composition and the quality. The proper functioning of spleen which is necessary to maintain the physiology of blood is also modified. If spleen fails to clean the blood having undesirable *barid yābis* (cold dry) substances then *mizāj* of liver becomes abnormal drifting to *barudat* (coldness) and *yābusat* (dryness) (Ibn Rushd, 1987). In case of *sue mizāj yābis* of the liver the viscosity of blood increases while its volume decreases, whereas in *sue mizāj ratb* (abnormal wet temperament) of liver the volume of blood increases (Jurjani, 2010). However, excessive abnormal *harārat* (vital heat) i.e. *sue mizāj hār* (abnormal hot temperament) can cause debility in liver function, as a result liver may be unable to produce normal constituents of blood.

According to Ibn Sina (980-1037AD), blood becomes morbid under the influence of *sue mizāj sāda* (qualitative altered temperament). It has been further argued that blood becomes morbid because of the intervention of two main factors: either because of pathological components of external environment or morbid substances produced endogenously. When a component part of blood becomes *muta'affin* (septic) its *lateef* (diffusible) part is changed into serous bile and *kaseef* (coarse) part into bilious melanchole (Tabri, 2010), whereas the second variety in which temperament is changed by morbid humour, has several sub types depending on involvement of specific humour and the types of morbid humour e.g. various types of phlegm, black bile, or yellow bile.

Pathological Aspect

Changes occurring in blood that convert it in to abnormal blood vary enormously depending upon the pathological component involved. Blood may become viscous, morbid, and serous, or its taste may change into bitter, salty or sour (Ibn Sina, 2014). Morbid blood also varies in colour (Jurjani, 2010; Nafis, 1954; Baghdadi, 2005). The colour may be blackish or bluish or whitish (Tabari, 2010). Whitish colour which is the reflection of coldness appears to be due to dominance of phlegm which has colder temperament as compared to the normal blood. Black colour is the expression of ascendance of black bile or a demonstration of *ihteraq* (combustion/oxidation) of other humours; it is warmer than blood predominant with other excessive humours (Baghdadi, 2005). Smell of blood may become abnormal (Jurjani, 2010; Nafis, 1954; Baghdadi, 2005) due to access of any *mut'affin khilt* (infected humour) or due to *ta'affun* (sepsis) in blood itself (Baghdadi, 2005). The taste of morbid blood changes in commensuration of the specific

humour that is in excess and is the major cause of morbidity. It becomes bitter due to yellow bile or sour due to *balgham hamiz* (sour phlegm) or *sawdā' hamiz* (sour melanchole) (Jurjani, 2010; Nafis, 1954; Baghdadi, 2005). Blood becomes abnormally viscous due to inordinate amount of phlegm and serous due to presence of excessive yellow bile (Table 1& 2) (Jurjani, 2010; Nafis, 1954). On the basis of these changes morbid blood are classified into fourteen different types (flow chart – Fig 1).

Ismail Jurjani (1041-1136 AD) has given a detailed account of morbid blood in his book Zakheera Khwarzam Shahi. According to him *khūn safrā'wi* (bilious sanguine) is less viscous than normal, yellowish in colour, strong in odour, frothy, hotter, takes much time to coagulate and is relatively bitter in taste. *Khūn balghami* (phlegmatic sanguine) when exposed outside the body it is soggy but very soon it becomes viscous, coagulates in a very short time and has mild odour, but if infected it causes to emit bad odour and when kept for an hour it releases fluid. Whereas *khūn sawdā'wi* (melancholic sanguine) is black, viscous and has bad odour. It does not take much time to coagulate. If a little water is added to it and shaken, it scatters and takes the shape of fibers and liberates bluish watery fluid (Table 1 & 2) (Jurjani, 2010).

Table 1: Characteristics of normal and abnormal blood as mentioned in Unani literature

Characteristics	**Normal blood**	**Abnormal blood**
Colour	Red	Blackish /Bluish /Whitish
Odour	Odourless/devoid of bad odour	Bad odour
Temperament	Hot and wet	Altered
Viscosity	Motadil	Viscous/Watery
Taste	Sweet	Bitter /Sour/Salty
Reaction	Alkaline	Acidic
Quantity	Highest in proportion to other humour	Altered

Table 2: Characteristics of abnormal blood due to dominance of specific humour

Characteristics	***Safrā***	***Sawdā'***	***Balgham***
Colour	Yellowish	Blackish	Whitish
Appearance	Frothy	-	-
Odour	Strong	Bad/Sour	Mild
Viscosity	Less viscous	More viscous	Viscous and Sticky
Taste	Bitter	Sour	Sour
Coagulation time	Delayed	Moderate	Early
Temperament	Excessive hot	Excessive hot	Less hot

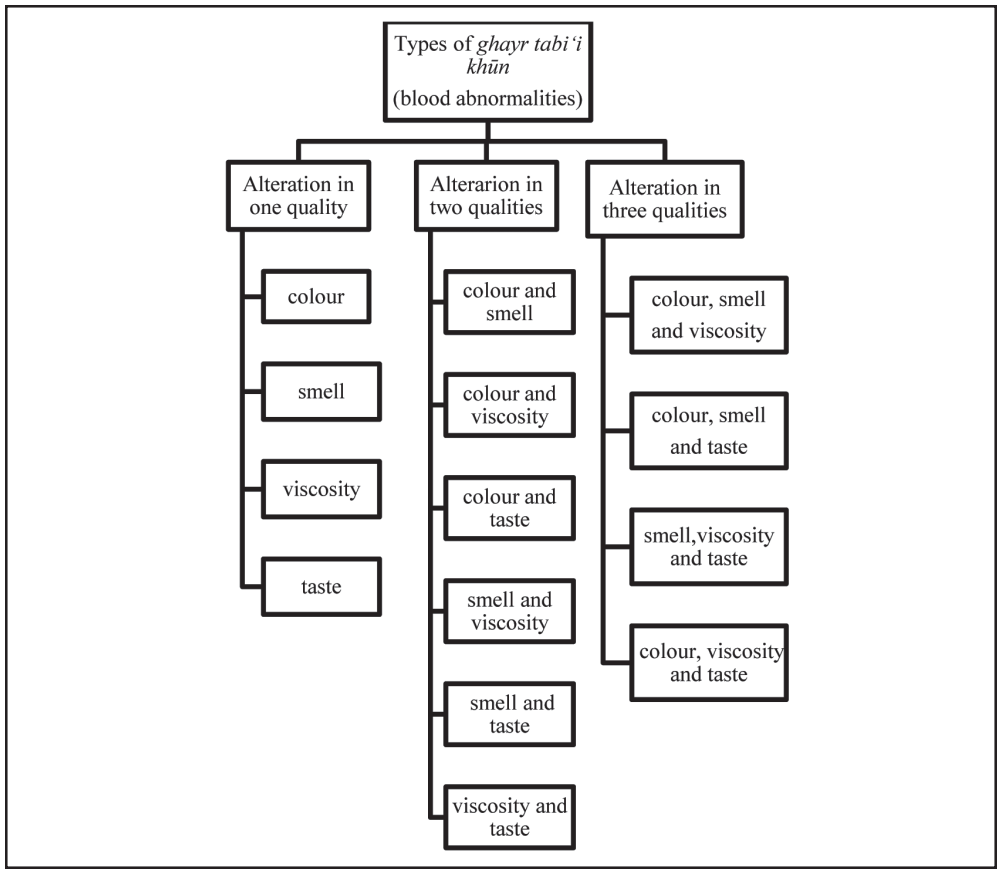

Figure 1: Types of abnormal blood

In respect of changes that may take place in normal blood, it is mentioned in *Moalijate Buqratiya* that, changes in the blood may be mild or severe and may be either in its quantity or quality or both. If changes occur in quality, it may be in any one of the qualities such as cold, hot, dry or wet or in combination of cold with dry or wet quality and hot with dry or wet quality.

Clinical Manifestation

In Unani medicine the diagnosis of change in humours is determined from the changes occurring mainly in complexion, urine, stool and pulse. A person's complexion reflects the state of blood in his body. A mild change in the quantity of blood affects the colour of a person and causes to induce lethargy, lassitude, indigestion, etc (Tabari, 1997). If the quantity of blood is increased excessively, it either remains normal in *tabi'at* (nature) or depart from it. In first case the individual may experience somnolence, abnormal sweet taste in mouth, psychological disturbances etc. If it departs from normal *tabi'at* (medicatrix naturae), it leads to tiredness, exertion, heaviness, pain in joints etc in a person afflicted with abnormally increased quantity of blood. If the change in quality is disposed towards *barudat* (coolness) then it leads to *istirkha* (atony/flaccidity), *jamud* (catalepsy) and *lahmi amraz* (muscular disorders). If shift of quality is towards

hārr (hotness) and *hādd* (acuteness) then it produces *surkh bada* (carbuncle), *namla* (herpes), *awram falghamuniya* (sanguineous inflammation), *dummal* (boil) and *kharish* (pruritus) (Tabari, 1997).

Few non specific symptoms due to morbid blood include pain, redness, swelling, congestion, indigestion, anorexia, weakness, lethargy, weight loss, somnolence, abnormal sweet taste in mouth, psychological disturbances etc.

Diseases attributed to be caused due to *fasade dam:* an etiological correlation between Unani and conventional medicine

Diseases	**Causes in Unani medicine**	**Causes in Conventional medicine**
Epistaxis, heamorrohoids, tendency to bleed	Excessive hot and impure blood migrates towards nose or anus, *imtilae dam* (hypearemia), *amraze jigar* (liver diseases) (Razi, 1991).	Spontaneous busting of blood vessels due to congestion or hyperaemia, liver diseases.
Vascular disorders eg. discontinuity and rupture of vessels, Aneurysm	Abnormal increase in any of humour or whole blood alters the temperament of blood viz. *hiddat* (scorching) and *riqqate* (abnormally decreased viscosity of blood) *dam* causes congestion and leads to *tafarruq-i-ittisal* (discontinuity of vessel wall) (Kabiruddin, 1930).	Narrowing or complete obstruction of vessel lumina, either gradually (athero-sclerosis) or precipitously (thrombosis or embolism), Weakening of vessel walls, causing dilation and/or rupture, Hyperviscosity of blood, blood clot, high blood pressure.
Thrombosis	Hyperviscosity of blood due to increase in fat and glucose content of blood, malfunction of *quwwat dafi'a* (expulsive faculty) (Razi, 1991).	Hyperviscosity of blood, polycythaemia, hyper-lipidaemia, hyperglycemia.
Skin diseases eg. Acne, carbuncle, herpes, pitryasis nigra, leprosy, psoriasis, erysipelas, dermatophytosis, naevus, urticaria	Impurity of blood, infection of blood, dominance of any humour, excessive hot blood, hyperviscosity due to alteration in the temperament of blood.	Allergy, infection, hormonal disturbances in acne.
Different types of fever e.g. continuous fever septic fever, meningitis small pox Synochus fever	*Hiddat* (scorching) *ghalayān* (excruciating), excessive hot blood, dominance of any humour.	Heat exhaustion, Extreme sunburn, Inflammation, Infection.
Anaemia	Loss of blood, morbidity of blood, altered temperament of blood, diseases of spleen and liver.	Lack of production, abnormal production, Loss of blood, liver diseases.

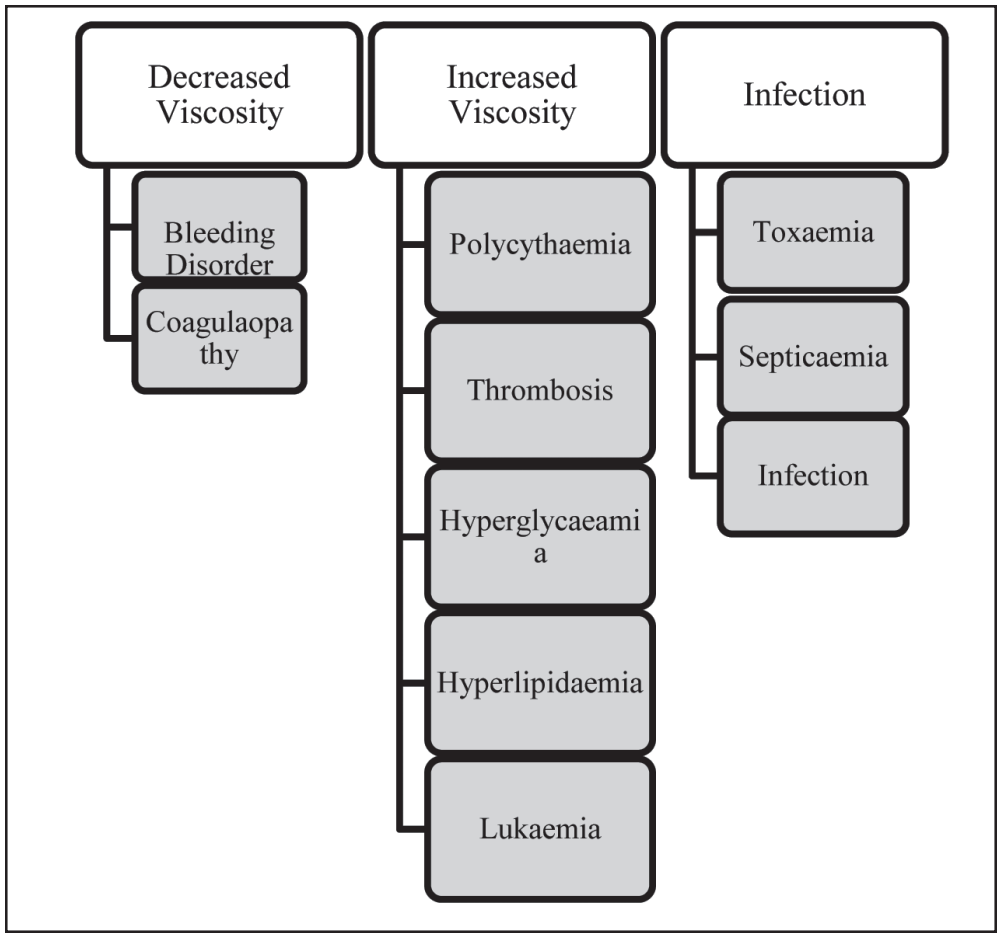

Figure 2: Abnormal blood in present perspective

Abnormal Blood in Contemporary Perspective

No emphasis has been laid on colour, taste and smell of blood to describe its quality character as such or as correlates of pathological manifestation in conventional medicine, whereas Unani physicians have described specific colour, taste and smell of normal blood. Unani medicine also stated that a change in colour of blood leads to change in the colour of skin and urine (Galen, 2008). Examination of urine and skin is still considered an important tool in the diagnosis of different diseases. There is no mention of hematological diseases categories in ancient Unani classics that exactly correspond to modern classification; however, it does not imply that Unani medicine has not been confronted with hematological diseases. Pathological changes that occur in hematological diseases may be correlated with morbid blood, as the signs and symptoms of blood diseases as described in modern medicine are almost similar to that of morbid blood. Splenomegaly is the crucial diagnostic sign in most of the diseases of blood. Interestingly Unani physicians have mentioned that in case of spleen

enlargement, body in general and liver in particular become weak, as a result liver shows insufficiency to produce normal blood. Moreover, spleen absorbs extra amount of blood which leads to further shortage of blood (Khan, 2010). Symptoms of fatigue, weakness, tiredness and fever were described by ancient physicians under *amrad' tihāl* (splenic diseases) (Khan, 2010) and almost similar symptoms are mentioned in conventional medicine under caption of various hematological disorders.

Though abnormality in any of the humour is responsible for morbid blood but excess of black bile is considered as the leading cause. The excess of black bile produces anaemia because it stagnates in between the liver and stomach and thereby interferes with the production of blood and humors (Ibn Sina, 2014). The diseases such as abnormal cold temperament of liver, stomach or intestine or hemorrhage etc cause commotion in the function of liver, especially its hematopoietic activity is altered (Jurjani, 2010). One of the study concluded that in patients with massive splenomegaly with ascites and cirrhosis, investigation should be focused on haematological diseases (Lazaridis et al, 2005). This indicates that hematological diseases may manifest in the form of splenomegaly and ascites. Unani physicians in their treatises declared that *su ul qinya* (a complex disease involving mainly liver and spleen and causing severe anaemia) leads to ascites (Arzani, 2010) (Fig.2).

Principle of Treatment

A comprehensive strategy for the management of blood diseases has been documented in Unani literature (Khan, 2009). *Tadeel* is one of the principles of treatment of blood diseases. Drugs used for treatment depends upon the nature of *fasad* (abnormality) and involvement of humours. In *Hiddate khūn,* quantity of blood gets increased so the treatment should be given with the drugs such as seeds of *Cichorium intybus, Lactuca sativa,* and *Coriandum sativum,* petals of *Rosa damascena,* juice of lemon, Jujube fruit, sandal wood, carrot and *sikanjabeen* etc that may be able to reduce the *hiddat* and its aftermath. These drugs provide soothing and cooling effect and ultimately neutralise the *hiddat* (scorching) and *ghalayān* (excruciating) of the blood. When blood becomes *raqiq* (decreased viscosity) due to inordinateness of yellow bile, it should be treated by *mushile safrā'* (cholagogue) drugs specially *Terminalia chebula,* juice of *Cichorium intybus* and Jujube fruit. If decreased viscosity of blood is due to the excess of morbid phlegm, colour of blood becomes whitish then *mushile balgham* (phlegmagogue) drugs are used. *Terminalia chebula* is very effective in this condition. Excessive liquidity of blood can be improved by the use of hot and dry drugs such as seeds of *Lepidium sativum, Ocimum basilicum* and *Adiantum capillus*. In this case massage and exercise is also useful.

Abnormal viscosity of blood can be normalized by *sikanjabeen,* water of *Foeniculum vulgare, Fumaria parviflora* and *Prunus domestica*. If increase in viscosity is due to black bile which is most common, blood becomes blackish. In this case *mukhrije sawdā'* (melanogogue) drugs are effective. If viscosity is due to phlegm, sour drugs and foods are beneficial and after concoction of phlegm, phlegmagogue drugs are used.

Sometimes, blood becomes morbid and putrid causing to give rise a number of ailments. Whenever an infection occurs fever is for sure. In this condition cold and dry drugs and *dafe taffun* (antiseptic) drugs are considered beneficial.

As a rule of thumb when the diseases develop because of the morbid blood the treatment guidelines require management of the anomalies of liver and spleen and improvement of their function in particular, along with the treatment modalities as discussed above to deal with the humoral imbalance and also the symptomatic relief. Even if these two organs are not afflicted grossly with a specific disease measures are taken to improve their functioning and power to withstand the prevailing situation of morbid blood and improve its quality and quantity.

Conclusion

The purpose of this review was to explore, explain and delineate the concept of morbid blood in the light of description in Unani classical literature and practices of physicians. The above **facts** suggest that there has been an elaborate and comprehensive account of hematological diseases available in ancient practices and the documentations. Pathological changes occurring in various hematological diseases are nearly the same as described in respect of morbid blood which simply stands for any derangement in quantity or quality of blood.

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