

Several Scientific Facts as Stated in the Verses of the Qur'an

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Abstract

The first verses revealed to prophet Muhammad SAW is begun with the word to read. This word is an instruction to all Moslem to read in the sense of to think of the creation of the creator. Someone still has the opinion that Islam discourages the development of science. This accusation is absolutely not true. The process of conclusion making in the science and the religion is something different. Religion is based on faith and science is based on human investigation or rational and logical facts. Quranic verses contain hints and a lot of scientific facts, but they are not scientific theories. Reading in the meaning of studying the nature is the first order from the Almighty God to prophet Muhammad. Nature and all creatures are created in balance. Creatures are all in pairs. Nature is prepared and maintained in systematic mechanism. Photosynthesis is considered to be the first chain of living mechanism of creatures which depend on food and on the supply of fire (energy) as stated in verse 80 chapter Ya Sin. The photosynthesis proses is the process of synthesis of carbon dioxide and the water. Water has unique physical and chemical properties. We can heat it, evaporate it, freeze it and use it for solving or combining other things. All living creatures require water, and almost the processing happening need water. Through the scientific observations and the natural evidences revealed, now we believe in the Qur'an that it is true all the times. Man is ordered to utilize their all capacities of mind and intellect to reveal the secret of the nature and the whole universe. In this way people may come to conclusion to have firmer belief in God, the Creator.

Key words : facts, nature, photosynthesis, verse 80.

Scientific Encouragement

Studying the verses guiding or enlightening the development of science may commence from any verses saying about the creation. Such the verse is verse number 2 of al-'Ala chapter : *Alladzi khalaqa fasawwa* (Who has created (everything) and proportioned it) . It is very interesting subject. We are all aware of this verse is applied to plant and animal and also to inanimate things.

From micro subject point of view, we get the understanding that all matters are composed of extremely small particles called atoms consisting of charged particles and uncharged particles called neutrons. While the charged particles are of two kinds, negative called electron and positive called proton. There are always in pairs and in equilibrium. In the world of vegetation, plants are propagated with two ways of propagation generatively (by generative cells : seeds) and vegetatively (somatic cells). There are male and female

flowers to generate new individual plant. It is very clear in animal world, there will be no ancestor without the matching of the different sexes meaning male and female.

There are a lot of references to the pursuit of knowledge in the Qur'an. Allah orders us to travel through the earth even to the outer space (if we afford) to see how Allah originated creation (interpretation of verse 33 Ar-Rahman chapter). In the sight of Allah people are equal. However, Allah describes they are not equal between a knowledgeable person and an ignorant person, they are in opposite positions, they are different.

Prophet Muhammad SAW cried on the eve of receiving revelation of verses 190 and 191 of al-Imron chapter.:

“Verily in the creation of the heavens and the earth and (in) the alternation of night and day –there are indeed signs for men of understanding; Men who remember Allah, standing, sitting, and lying down on their sides, and contemplate the creation of the heavens and the earth (with the thought) “Our Lord! Not for nothing have You created (all) this. Glory to You! Give us salvation from the suffering of the Fire.”

Tears streaming on prophet Muhammad's cheek, because he knew the future fate of his followers. There would be very little number of muslims who industriously seeing and thinking of natural phenomenon. Now a days, as we are all realized, the concerned of the prophet about the fate of *ummah* (muslims) are appearing in the very sight. We are split in factions, quarrelling each other, poor and lack of food (hunger), backwards in mastering the science and technology as if we are retarded people.

Natural phenomena of physical material and the life of organisms in our surrounding are the facts to be studied. When we understand the phenomena and master how to deal with them, then we are able to manage them for the sake of our prosperity.

The Almighty God keeps and maintains the creatures in balance in numbers and in qualities. Population of rabbits are controlled by the predator wolves, the birds population are controlled by the short of feed supply and so ford.

The gas elements in atmosphere must be in set components as it is in natural status if the other creature is to go on alive. This balance components of atmospheric gas will be discussed in detail later to see the Quranic verse number 80 in chapter Yaa Siin informing this occurrence.

First Order in *Quest* for Knowledge

The first verses revealed to prophet Muhammad SAW is begun with the text "to read". The word "read" is the first that descended from Heaven to Prophet Muhammad.

The five first verses are :*iqra' bismirabbika al-ladzi khalaqa: Khalaqa al-insana min 'a'laq: Iqra' warabbuka al-akram; Alladzi 'allama bilqalam: 'A'llam insana ma lam ya'lam.* (Read, in the Name of your Lord Who has created (all that exists): He has created man from a clot (a piece of thick coagulated blood). Read by your most beneficent Lord; Who by the pen teacheth man that which he knows not. These verses are the guide and the instruction for all muslim to read in the sense to think of. In the time the verses descended there were no written fact or scripture to read. Indeed, there were many poets or writer works of arts, it was famous among qureish as the best poetry composition and poet reader, but the verses says Read, in the name of your Lord Who created.

This instruction to read is the order to think of the creation of the Creator, not think of a poet or a composition of writer. Creature, man and the nature, human body that created from a clot, the nature and the universe. Muslim has to do research to fulfill the order,

The second instruction is read by your most beneficent Lord, Who by the pen teacheth man that which he know not. Teaching or education is obvious order in these verses. Muslims have to formulate the integration of research and education.

These verses show clearly that Islam not only encourages investigation on which science is based on, but also Islam in very concerned with scientific investigation. The first verses are not "believe" as the principle of faith. This evidence is the answer to some

people who still hold the opinion that religion discourages the development of science. Such the opinion tending to accuse the religion is far from being true.

The difference between religion and scientific research is that religion is based on faith, while science is based on investigation.. You may believe or disbelieve in religion, but Islam gives us to urging its principle before we conclude to be believer or disbeliever. It is obvious that Islam encourages investigation.

Early muslim may not need scientific facts because of the entire religious atmosphere in which they existed. The exposition of verses to those having very limited knowledge could not comply with what they had already learnt. This character of mind may become the reason why Islamic world is unvapourable and cast aside in the Held of research and development of science.

Weakness and Seeing the Last

The current situation of research and education in Islamic world is quite alarming and disappointing. As it was stated by Khalid Ahmad Qureshi (1999) scientific research and higher education in Arab states remains weak. When it was compared to other nation expenditure for research activities In Islamic states is very low. For illustration purpose. Israel elone spende one billion dollars on applied research, while the total expenditures of the whole Arab world do not exceed one hundred million dollars. In the Arab world number 120 Universities, 256 research centres and 1.5 million students in higher education. Only expectation this number would be double in the year 2000. Nevertheless this expectation was not reached and the result of scientific research do not match the figure.

That condition is not due to a shortage of resources but to a lack of appropriate condition for accurate and challenging scientific research. Yet this figure are very low in compaction with the developed states. Indeed, the developing states including the Arab states contribute less than 4 % in the overall research, while the contribution of industrial states attains 73%, The number of scientists and engineers in Arab world is 318 scientists for every one million people in comparation with 3600 scientists for the same number of people in developed countries.

The Prophet says the acquisition of knowledge is a duty incumbent on every muslim. The acquisition of knowledge is a must which should be carried out. Prophet says seek knowledge from the cradle to the grave, and That person who shall pursue the path of knowledge, God will direct him to the path of Paradise.

In the period of Caliph Harun AI-Rashid and his successors, appreciation and rewards were given to those learned men who translate into Arabic the books of Greek philosophers. At those time, no restriction were imposed to ban, they were initiated and encouraged and fully welcome as the spirit of Islam is in fact a scientific one.

The function of mosques for muslim are not strictly just for divine worshipping, they are often used for lecture halls or schools. Many works, books and innovations in the field of philosophy, sciences: medicals, astronomy are created that enhanced muslim world to the reputable condition.

Some Mufasirins Interpretations on Verse 80 of Chapter Yaa Siin

Alladzi ja'ala lakum mina assyajar al akhdhari nara, faidza antum minhu tuqidun: (He who produces for you fire out of the green tree, when behold you kindle therewith). Among words having nearly the same meaning are *fa'ala*, *khalaqa* and *ja'ala*, but the words have different understanding. The word *ja'ala* found in al-Quran in several meaning. Expressing the meaning *aujada* (create or making). The difference between *khalaqa* (create) and *ja'ala* means *aujada* is that *khalaqa* means create, the ability to present something new without prior example and need not resources or any real substance. As for *ja'ala* means *aujada* give the understanding of formation and assemblance of existing components.

At-Tabari interpreted the verse by correlating it with the previous and succeeding verses, *ja'ala* means to produce. God gives out from green tree fire, Ibnu Katsir explained the meaning *alladzi ja'ala lakum* as God Who commences the creation of tree (*assyajar*) out of water (*kullu syaiin khuliqa min ma'in*), growing and developing the green leaves and bearing fruits, then the tree senesced turns brown and dried as Ure wood. Ibnu Katsir explain further by quoting Qatadah view on this, that is meant by

syajaril akhdlar are al-marh and al-afar two varieties of tree growing in Hijaz region. The green wood of the trees will give out fire when they are hit or in friction.

Assuyuti gave views on the verse, that God is the merciful to the whole creatures, The verse is the evident of the supreme will of God as the creator. He lights out of green or wet wood fire, while the character of water is fire extinguisher.

Almaragi gave interpretation that annual process of green wood is the existing of water, then God turns the green wood to be inflammable. God created something unrealistic to man (*Badi'u assamawat wal ardl*), created fire out of watery wood, and no one could reject to the willingness of God.

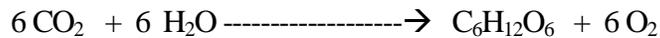
Sayid Quthb related the verse to three verse (verses nos 77,78 and 79) and the succeeding verse (no 81). He opined there are interrelation among the verses, all describe the will of God in creating everything of unrealistic to man. Sayid Quthb said, the verse is scientific miracle. He mentioned term "energy" for light energy in active inside the green wood derived from solar energy absorbed.. The result of the process is an element of component forming green tree as timber. However, he did not explain the process of solar energy absorption. Ultimately, he was frankly not a competent for revealing (the secret of scientific miracle in al-Quran. He said, if I were able to know, I would be the pious and would live just for worshipping the Almighty God.

Abdul Malik Karim Amrullah (Hamka) explained and said something related with chaircoal (organic fossil). Out of the chaircoal man light fire. The genesis of chaircoal is begun with the buried wood along time ago under the massive of the earth.

Muhammad Quresh Shihab said of botanical term of chlorophyll, and God created energy out of the chlorophyll the green pigment contained in leaf or green tree (wood) or every of plant organ that green in colour. That is why, the verse used the word *syajar* (tree) instead of *waraq* (leaf), *subhanallah*, scientific secret is now revealed clearly. Quresh Shihab also said the process of photosynthesis and solar radiation and respiration process and chemical energy. As a modern scholar, he can relate verse interpretation knowledge with the progress of science.

Fire or Energy Product of Photosynthesis in the *Syajaril Akhdhar*

Actually, the formation of fire as stated in the verse or energy (Sayed Quthb and Quresh Shihab) is clearer since the finding of the formulation in photosynthetic process. The equation is as follow



In chlorophyll the extraordinary energy derived from green tree is the result of a extremely complex process involving of many coordinated biochemical reactions. Shortly, photosynthesis is the process of synthesis of sugar (glucose) from carbon dioxide (CO₂) and water (H₂O) in the presence of sunlight taking place in chlorophyll and gives out the waste product oxygen (O₂)

The chlorophyll (the green tree) as the dominant factor plays a role as the captive in the so called light dependent reaction, the pigment chlorophyll absorbs light, while in the light independent or dark reaction CO₂ is captured from the atmosphere and in a complex process releases 3-carbon sugar which are later combined to form glucose C₆H₁₂O₆ Simply, photosynthesis may be defined as the conversion of light energy into chemicals by living organism (*syajarul akhdlar*/green plant).

Syajarul akhdlar or green organism as stated in the verse may be considered as the first producer (from nature: water and carbon dioxide) supplying food (energy) for animal feeding on vegetation (herbivores), in turn the herbivore animal will become the supplying food for animal (predator) feed on meat (carnivore). The cycle goes on that the living in the earth maintain in balance. The same happening in the equilibrium of gas components in the atmosphere.



Figure : Chlorophyll in a leaf

Atmospheric gas is vital for the human life, man inhalls oxygen and exhalls carbon dioxide. The atmosphere contains 78 % nitrogen, 21% oxygen, 0,03 % carbon dioxide, and other trace gases. Carbon dioxide is small in quantity but it is toxic for human and animal. The percentage of the gas must maintain, decreasing or increasing is detrimental to life. The emission of carbon dioxide (toxic gas) out of vehicle and burning organic matter in factories or industries endanger the human health. Fortunately God created automatic mechanism of this balance, carbon dioxide in the atmosphere is absorbed through photosynthesis in the leaves of vegetation "*syajaril akhdllar*", and at the same time the oxygen is released to make the atmosphere fresh. By that natural mechanism we acknowledge the Almighty Allah by saying *Subhanallah, rabbana ma khalaqta hadza bathila*.

Substances which are produced in photosynthesis are glucose and oxygen as the by product. Digestive process in human nutrition is the process to produce sugar to maintain body warm, growth and development. Glucose solution is utilized in medical treatment (tranfusion) to heal the dehydrated sick body. All at one or may be in gradual, the lame body due to dehydration turns stronger. Oxygen is the real fire, it is easily burn and imflamable in higher consentration. Chemist uses symbol $+O_2$ as to represent oxidation or burning process.

Our body inhales oxygen to burn nutrition conveyed in blood. Man can only withstand within 4 minutes without oxygen.

It is revealed, reasonable, that the fire deriving instantly from green tree is the product of photosynthesis process occurs in the green tree. Man of modern time will not accept if fire comes out of the green or wet wood, but physiologically oxygen come out of green parts of tree as the by-product of photosynthesis. The wet wood must be dried in in the sun to make firewood. Like wise, the earlier muslim accepted fire comes out of the green wood in case of Ibnu Katsir's interpretation of light comes out of *al-afar* and *al-marh* wood.

The photosynthesis proses is the process of synthesis of carbon dioxide and the water. Through the scientific observations and the natural evidences revealed, now we believe in the Qur'an that it is true all times, and within this writing, my own observations on the natural phenomena those fully revealing the verses of Qur'an and the saying of prophet. Of course, my observation on the nature will relate to my academic competence and to my experiences in doing so little research works in the field of agricultural science . Agricultural science is belong to the applied science. A student of agriculture has to sit for the prerequisite basic science classes of chemistry, physics, basic geology, and fundamentally the theories of biology. Without these bases of sciences an agronomist could do wrong practices, if not do nothing in the field of modern agriculture.

In thinking of nature, it is unavoidable to think of the important roles of water. Water which is mentioned in the Qur'an is source of all life. Water is also mentioned as the layer having position under "*Arsy*= the throne"¹.

In the beginning of universe formation water is also mentioned in surat al-Abasa verse 25. Water was poured after the separation of the heaven and the earth to cool the hot earth. In another context, there are verses name the water in relation to sending down it from the sky as gift in the form of precipitation or rain for the whole creatures.

Water has unique physical and chemical properties. We can heat it, evaporate it, freeze it and used it for solving or combining other things. All living creatures require water, and almost the processing happening need water.

Verses in chapter al-ghasiah say ; *Afala yandhuruna ila al-ibili kaifa khuliqat: Wa ila as-samai kaifa rufiat: Wa ila al-ardli kaifa nushibat;* (Do they not consider the camels, how

¹ Chapter al-Hud verse 7.

◆“And He it is Who created the heavens and the earth in six Days - and His Throne was upon the water”

they are created?; And the Heaven, how it is raised?; And the mounts, how they are set up?; And the earth, how it is extended?). These verses ask people to think of the environment and themselves, and indirect order to utilize their all capacity of mind and intellect to reveal the secret of the nature and the whole universe.

Conclusion

Any effort to reveal the secret of scientific miracle of al-Quran in various periods was, is and will be suitable to man ration. Scientific trends in interpreting verse will at the end to the compassion of man that the almighty God is the Supreme Creator. Verse 80 of Yaa Siin chapter informs the formation of food (glucose or sugar) and energy (oxygen). Photosynthesis proses is the process of synthesis of carbon dioxide and the water. Through the scientific observations and the natural evidences revealed, now we believe in the Qur'an that it is true all times. In this way people may come to conclusion for having firmer belief in its creator.

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Preface for the Deposing on the Digilib (on August 2017)

The article has inspired the author to further write for explanation the facts in the environment as the prediction or information in the Qur'an so in the end of the 2012 and article was published in International journal of STD of PCST (Pakistan) entitles Developing Islamic Economic Production. The process of food production are described (Subandi, 2012). And then article Science As A Subject of Learning in Islamic University was published to clarify how science is in the Islamic University (Subandi and Abdelwahab, 2014). However this article was based on the previous articles published i.e. To recollect how muslim obtained the golden ages in developing the science and teknologi (Subandi, 2007), and before this article an article of biology was written and published in tarbiyyah faculty explaining the education in biology (Subandi, 2005).

Hydroponic study was written by Subandi, Nella Purnama Salam, Budy and Frasetya. (2015) to elaborate cultivation in urban area. Nature that supply all the needed is explained in paper by Subandi (2011) in article entiles Notes on Islamic Natural Based and Agricultural Economy; In 2013 the author managed to publish one article on cultivating of tea plant: Physiological Pattern of Leaf Growth at Various Plucking Cycles Applied to Newly Released Clones of Tea Plant (Subandi, 2013)

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