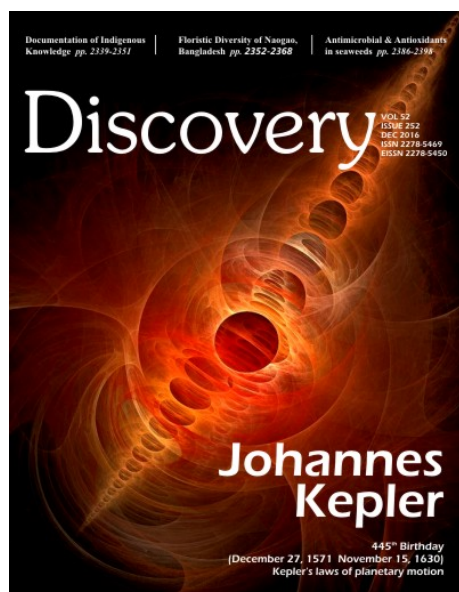


# Discovery

## About the Cover



### CELEBRITY OF THE MONTH

#### Johannes Kepler

445<sup>th</sup> Birthday (December 27, 1571 – November 15, 1630)

Kepler's laws of planetary motion

Johannes Kepler was a German mathematician and astronomer who discovered that the Earth and planets travel about the sun in elliptical orbits. He gave three fundamental laws of planetary motion. He also did important work in optics and geometry. He was born in the small town of Weil der Stadt in Swabia and moved to nearby Leonberg with his parents in 1576. Throughout his life, he was a profoundly religious man. He was convinced that God had made the Universe according to a mathematical plan. He believed firmly in the Copernican system. Kepler was forced to the realization that the orbits of the planets were not the circles demanded by Aristotle and assumed implicitly by Copernicus, but were instead the "flattened circles" that geometers called as ellipses. Kepler obtained Brahe's data after his death despite the attempts by Brahe's family to keep the data from him in the hope of monetary gain. There is some evidence that Kepler obtained the data by less than legal means; it is fortunate for the development of modern astronomy that he was successful. Utilizing the voluminous and precise data of Brahe, Kepler was eventually able to build on the realization that the orbits of the planets were ellipses to formulate his *Three Laws of Planetary Motion*.

Kepler's First Law: Planets move in ellipses with the Sun at one focus.

Kepler's Second Law: The radius vector describes equal areas in equal times.

Kepler's Third Law: The squares of the periodic times are to each other as the cubes of the mean distances.

Kepler can truly be called the founder of celestial mechanics. His astrology was based only on the angles between the positions of heavenly bodies. He expresses utter contempt for the complicated systems of conventional astrology. Kepler died in Regensburg, after a short illness. He was staying in the city on his way to collect some money owing to him in connection with the *Rudolphine Tables*. He was buried in the local church. Kepler's extensive and successful use of mathematics makes his work look 'modern' (Image: <http://img06.deviantart.net/>).

## ANALYSIS

### Implementation of Tri Hita Karana - Based Organizational Culture by Lembaga Perkreditan Rakyat at Kuta Traditional Village

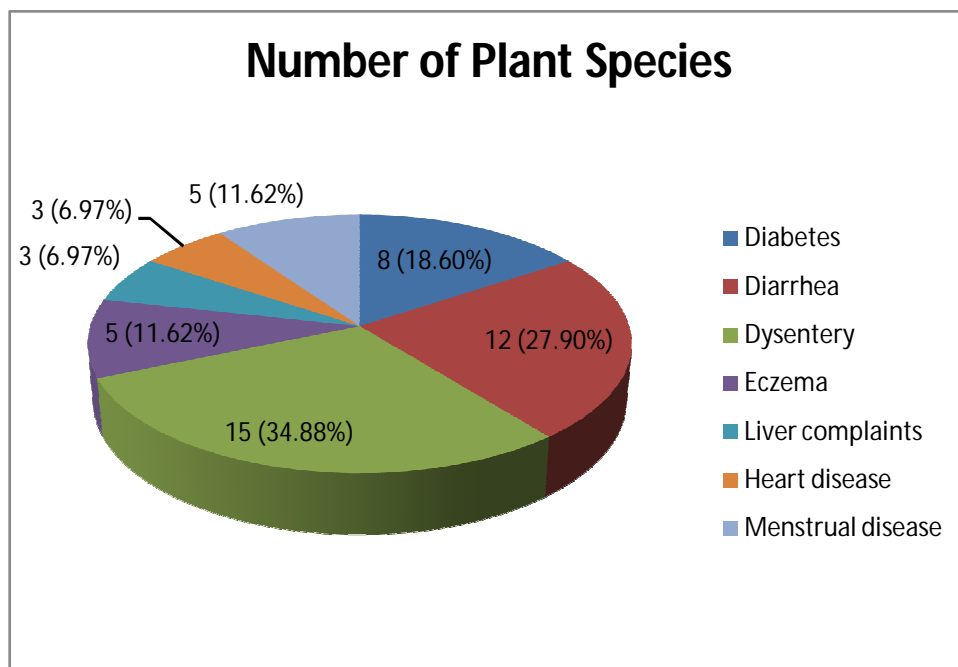
Anak Agung Ngurah Gede Sadiartha

The Village Credit Union '*Lembaga Perkreditan Desa* (herein after abbreviated to as LPD)' which is managed by Kuta Traditional Village 'Desa Adat Kuta' has been developing dynamically and has successfully been able to empower the local people. The implementation of the *Tri Hita Karana*-based organizational cultural value has contributed to such a success. The *Tri Hita Karana* (hereinafter abbreviated to THK) has also made such a unit of LPD exist and develop perpetually, and able to make innovations and compete with other general banks. This present study is intentionally intended to discuss the following problems; they are (1) how the THK-based organizational culture has been implemented by the unit of LPD at Kuta Traditional Village; (2) what has been the impact of the implementation of such an organizational culture on the empowerment of the local people (the people living at Kuta Traditional Village). This present study is the result of the qualitative study from the perspective of cultural studies. The data were descriptively, qualitatively, and interpretatively analyzed using several critical theories of cultural studies. The result of the study shows that the THK-based organizational culture implemented by the unit of LPD at Kuta Traditional Village refers to the attempt made to maintain the harmonious relation between man and Almighty God (referred to as *parhyangan*), the harmonious relation between man and his fellow beings (referred to as *pawongan*), and the harmonious relation between man and his environment (referred to as *palemahan*).

*Discovery*, 2016, 52(252), 2331-2338

### Documentation of Indigenous Knowledge for the Treatment of Diarrhea, Diabetes, Dysentery, Eczema, Liver complaints, Heart and Menstrual diseases at Jamtala Village of Chapai Nawabganj District, Bangladesh

Moriom Jamila, Mahbubur Rahman AHM



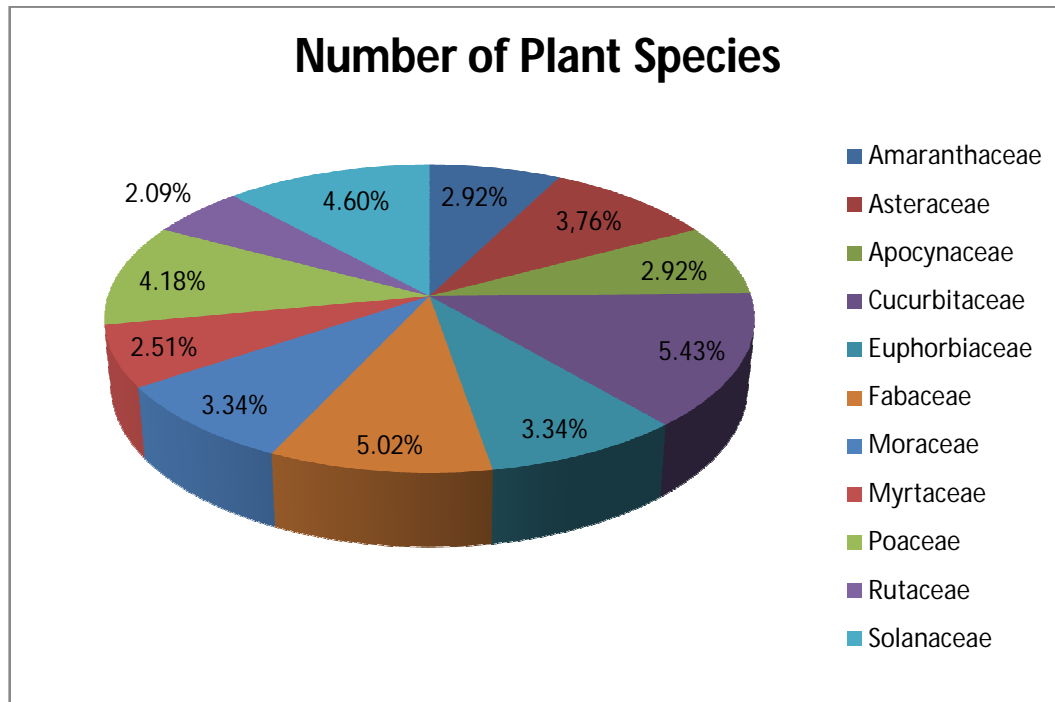
This study was carried out in order to determine which plants and the ways in which these plants are used for the treatment of seven important human diseases among the tribal people of Jamtala village located in the district of Chapai Nawabganj, Bangladesh. During the field trips, the information was collected through interviews, including various data obtained from local healers and traditional medicine men, herbalists, patients and elderly persons. A total of 43 plants belonging to 30 families were documented for their therapeutic use. Further analysis on the families of medicinal plants has shown that family Moraceae, Euphorbiaceae and Caesalpiniaceae are represented by the highest number of species. For each species scientific name, local name, family name, habit,

ailments, treatment process and parts used are provided. The results suggest that the tribal practitioners treated seven important human diseases with plants, which scientists may benefit from further studies in their continuous quest for newer and better drugs.

*Discovery*, 2016, 52(252), 2339-2351

### Floristic Diversity of Naogaon Sadar, Bangladesh with Special Reference to Medicinal Plants

Jesmin Nahar, Mahbubur Rahman AHM



The present paper focused floristic diversity of Naogaon sadar, Bangladesh was recorded. A total of 239 species belonging to 198 genera under 83 families were documented. Amaranthaceae, Asteraceae, Apocynaceae, Cucurbitaceae, Euphorbiaceae, Fabaceae, Moraceae, Myrtaceae, Poaceae, Rutaceae and Solanaceae are the dominant families with high species diversity. One hundred seventeen (117) medicinal plants have been recorded with their uses for the cure of more than 59 diseases, and some of these are abscess, asthma, abortion, burning sensation, bronchitis, cancer, cough, cold, colic, chicken pox, constipation, dysentery, diarrhea, diabetes, eczema, fever, fracture of bone, headache, heart disease, indigestion, inflammation, itches, jaundice, leprosy, menstrual disease, ophthalmia, paralysis, piles, rheumatism, stomachic, scabies, skin diseases, snake-bite, sex problems, toothache, ulcers, vomiting, worm, wound and others. The investigation can be concluded that the plant can be considered as a suitable source of pharmaceutical industry for new drug development.

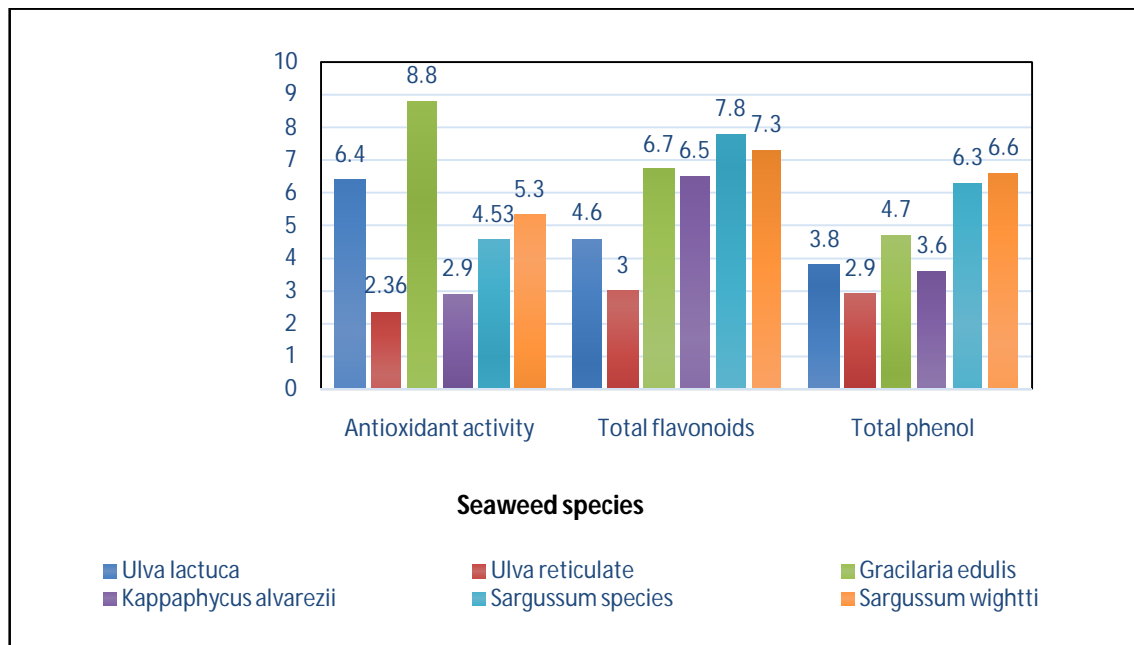
*Discovery*, 2016, 52(252), 2352-2368

### RESEARCH

#### Assessment of the Antimicrobial and Antioxidant Activity of seaweeds and seaweed based foods

Jayasinghe PS, Pahalawattarachchi V, Ranaweera KKDS

Seaweeds have been used for preparation of low caloric foods such as salads, soups, Jelly, Jam and puddings for many centuries in raw or semi processes of form. They are known as source of secondary metabolites which can be used as antioxidants and antimicrobials. Present study was carried out to evaluate the antimicrobial and antioxidant activities of methanol extract of different seaweeds namely *Ulvalactuca*, *Sargassum wightii*, *Gracilaria edulis*, *Gracilaria verrucosa*, *Kaphaphycusalevarezii* and their extracted polysaccharides agar agar, carrageenan, alginic acid and seaweed based soup and jam.



*Discovery*, 2016, 52(252), 2386-2393

## PERSPECTIVES

### Biometric Student Registration and Verification System

Md. Mijanur Rahman, Sifat Nur Rahman, Mahbubur Rahman, Firoz Haider

This project work is devoted to present a biometric identification system based on fingerprint recognition. Biometrics can be taken literally as 'life measurement' but the term is usually associated with the measurement and use of unique physiological characteristics to identify an individual person. Biometric Identification Systems are widely used for unique identification and verification of humans. At present, there are many types of biometric technology have been used; such as, fingerprint recognition, face recognition, voice recognition, iris recognition, etc. Fingerprint recognition is considered to be the best and fastest method for biometric identification. The biometric fingerprint features are secure to use, unique for every person and do not change in one's lifetime. The aim of this project is to develop a fingerprint recognition system that can accurately identify the students of the department as well as the university. The proposed system used Minutiae Matching Algorithm to identify student's fingerprints. In this project work, all the software modules were implemented using C# Software Development Kit (SDK) and tested in windows platform. From the experimental results it can be concluded that the proposed system can effectively verify the students of the Computer Science and Engineering department at Jatiya Kabi Kazi Nazrul Islam University, Bangladesh.

*Discovery*, 2016, 52(252), 2399-2407

### History and Role of Islamic Finance

Anwarul Islam KM

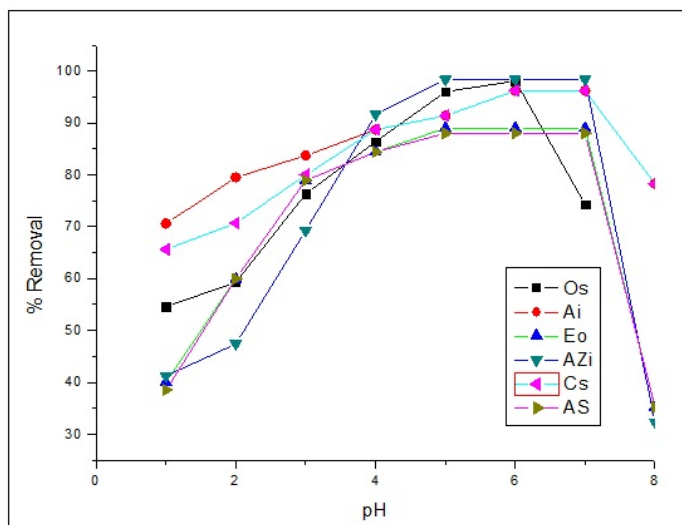
Islamic banks have been created to cater to the growing demand, driven by globalization and the vast wealth of some Muslim states in the Middle East and Southeast Asia, and Islamic finance has moved from a niche position to become a mainstream component of the global banking system. Islamic banking refers to a financial system which is consistent with principles of Islamic law (or 'sharia') and guided by Islamic ethics. This paper presents Islamic finance's role in the new world order.

*Discovery*, 2016, 52(252), 2410-2413

## RESEARCH REPORT

### Construe of Five Green Adsorbent for Water Remediation with One Chemical Adsorbent

Gnanasangeetha D, Sarala Thambavani D



Proficient process for the fabrication of benevolent adsorbent with Zinc oxide nanoparticle embedded on activated silica (ZnO- NPs- AS) exclusive of calcinations was developed by green synthesis method using aqueous leaf extract of *Ocimum sanctum*, *Acalypha indica*, *Emblica officinalis*, *Azadirachta indica*, *Corriandrum sativum*. The method involved the use of zinc acetate dehydrate ( $Zn(CH_3COO)_2 \cdot 2H_2O$ ) and sodium hydroxide (NaOH) as a precursor and aqueous extract of *plants* as a solvent with manifold roles as promoter, stabilizer and template for synthesis of zinc oxide nanoparticle. Adsorption behavior of benign adsorbents was applied to Freundlich, Langmuir, Tempkin, and BET Isotherm which afford important information on the surface properties of the adsorbent and its affinity for adsorbate. Data correctly fits Langmuir isotherm than Freundlich, Tempkin and BET isotherm proving monolayer and homogenous surface of adsorption with  $R^2$  nearly 0.992, 0.989, 0.970, 0.974, 0.968 and 0.956. In this study pseudo second order model fitted better ( $R^2=0.982, 0.603, 0.732, 0.906, 0.603 \& 0.732.$ ) when compared with first order kinetic model. Therefore the adsorption data in the present study supported chemisorption. The linearity of the plots also showed the validity of pseudo-second order model. The sequence of adsorption of adsorbent follows ZnO-NPs-AS-*Os*> ZnO-NPs-AS-*Ai* >ZnO-NPs-AS-*AZi* >ZnO-NPs-AS-*Eo* >ZnO-NPs-AS-*Cs*> ZnO-NPs-AS.