

News (Attachment 1)

The Summary of October 2022

1- Title: KISR Successfully Assesses the Safety and Quality of Camel Milk Using Second-Generation DNA Detachment

Summary:

The Arabian camel is one of the most important domesticated animals in the dry regions of Asia and Africa. Camels have health benefits and great economic importance, especially with regard to their products derived from camel milk.

2- Title: KISR Organizes International Training Course on the Use of Isotopes

Summary:

Within the framework of cooperation with the International Atomic Energy Agency (IAEA), KISR's Water Research Center (WRC), organized an international training program titled "Management of Coastal Groundwater Reservoirs in the Arab- Asia Region". The program was held during the period from 16 to 27 October 2022.

3- Title: KISR and PAI Signed Memorandum for Investment Opportunities of Industrial Projects

Summary:

The Kuwait Institute for Scientific Research (KISR) and the Public Authority for Industry (PAI) signed a contract at KISR's main premises. The memorandum aimed at achieving cooperation in preparing investment opportunities for industrial projects of the most important products derived from the petroleum industries of the State of Kuwait.

4- Title: KISR and KOC Sign a Contract for the Ecological Monitoring Project for the Process of Restoring the Vegetation of Damaged Lands

Summary:

The Kuwait Institute for Scientific Research and Kuwait Oil Company, in cooperation with the Kuwait National Focal Point for Environmental Projects, signed a project related to restoring the vegetation cover and the ecological performance of the ecosystems of the lands affected by the Iraqi invasion of the State of Kuwait in 1990.

News (Attachment 2)

The Detailed News - October 2022

Title: KISR Successfully Assesses the Safety and Quality of Camel Milk Using Second-
Generation DNA Detachment



News:

The Arabian camel is one of the most important domesticated animals in the dry regions of Asia and Africa, and camels have health benefits and great economic importance, especially with regard to their products derived from camel milk. The latter is a medium rich in nutrients, and allows the growth of various bacteria species. Therefore, KISR embarked on a research project aimed at evaluating the quality and safety of camel milk, and monitoring the impact of different camel breeds, their geographical distribution in the country, and their grazing and fermentation seasons on the microbial diversity of this milk. The research team is formed from Dr. Rita Rahma, Dr. Hussam Al-Omaira, Dr. Abrar Akbar, Dr. Abdulaziz Al-Ateeqi, Dr. Mohammed Al-Otaibi, Shafaa Al-Marri, Thunayan Al-Ennezi, Salah Al-Mulhem, Tahani Al-Sharrah, Batoul Akbar, Muhammad Kishk, and Anisha Shajan. They succeeded in revealing the microbial community of raw camel

milk in the largest number of samples, and for the first time in the world, using second-generation technology to decipher DNA sequences.

Dr. Rita Rahma, from KISR's Environment and Life Sciences Research Center (ELSRC) and the Project leader, said that recently there has been an increasing interest in attempts to understand the microbial structure of camel milk, due its importance to animal health, and its link to the standards of quality and safety of dairy products consumed by humans. However, the available information on the microbial structure of raw camel milk, using an unbiased technique that does not misjudge the existing bacterial communities such as (the second-generation technology to decipher nuclear acid sequences, is not available. The complete bacterial structure (microbial community) of both raw and fermented camel milk was first identified in the West Asian region.

The results showed that this region is distinguished by some special races and it is interesting that the microbial structure of camel milk is very similar to its counterpart (microbial structure) in humans, and raw camel milk contained lactic acid bacteria with lactic acid that has promising nutritional technological properties. It also has bacteria that can cause disease and food spoilage. Moreover, the research team has demonstrated the significant impact of geographical location, camel breeds, and grazing seasons on the microbial community of raw camel milk.

Dr. Rahma explained that the results of the project benefit the State of Kuwait, especially camel owners, and the Public Authority for Agriculture and Fish Resources, and the food industry sector, especially the dairy industries. She stressed the importance of these results in designing an appropriate control and prevention program for dairy camel herds, understanding the causes of mastitis and opening prospects for the development of its treatments. She added that these results could be commercially exploited by contributing to the development of the dairy products industry locally and regionally. Dr. Rahma clarified that the quality and safety standards should be taken into account; and to make use of the beneficial bacteria discovered in camel milk in food technology, and promoting the general health of individuals through bio-enhancers and peptide antimicrobials.

A scientific paper, detailing the microbial structure of camel milk in the State of Kuwait and the impact of geographical location and seasons on it, was recently published in a refereed

international journal with a high impact factor, (Food Research International, Impact Factor 7.4), which is one of the outputs of this research project.

Dr. Rahma extended her sincere thanks and gratitude to the camel breeders, who contributed to the provision of samples of raw camel milk, and the Kuwait Foundation for the Advancement of Sciences for their support to this project under number: PR18-12SL-16.

**Title: KISR Successfully Assesses the Safety and Quality of Camel Milk Using Second-
Generation DNA Detachment**



News:

Within the framework of cooperation with the International Atomic Energy Agency, KISR's Water Research Center organized an international training program titled "Management of Coastal Groundwater Reservoirs in the Arab-Asia Region." The program was held from 16 to 27 October 2022; participants were from Kuwait, Saudi Arabia, Oman, the Hashemite Kingdom of Jordan, the Republic of Lebanon, and the Sultanate of Oman.

The IAEA's National Liaison Officer, Dr Nader Al-Awadhi, highlighted the important role played by the International Agency in supporting scientific activities and research projects implemented by KISR. He stressed the importance of various applications of stable and radioactive isotopes in various fields of science and engineering, such as water sciences, agricultural and industrial activities, medical, food processing, and others.

The WRC's Acting Executive Director, Dr. Khaled Hadi, stressed the importance of this training course as it summarizes the results and recommendations of one of the important research projects successfully completed by the WRC, in cooperation with the IAEA. In this regard, Dr. Hadi reviewed the areas of cooperation between the WRC and the IAEA during the past years, expressing his hope that this cooperation between the two parties continues to serve those in charge of scientific research in future .

The WRC's Science and Technology Division Director, Dr. Yousef Al-Wazzan, commended the efforts exerted, during the past years, by the team of the project titled "Management of Coastal Water Reservoirs Located along the Southern part of Kuwait Bay, and its Protection from Pollution." The project resulted in the scientific content of this training program, hoping that the experiences gained by the project team will be transferred to the program's participants.

The IAEA Technical Officer, Dr. Saravana Kumar, commended the efforts exerted by KISR in general, and the WRC in particular. The latter addressed issues related to isotope applications in hydrology; and pointed out to the existing coordination between the IAEA and KISR for the transfer of knowledge and sciences in various fields to neighboring regional countries.

Title: KISR and PAI Signed Memorandum for Investment Opportunities of Industrial Projects



News:

The Kuwait Institute for Scientific Research (KISR) and the Public Authority for Industry (PAI) signed a contract at KISR's main premises. The memorandum aimed at achieving cooperation in preparing investment opportunities for industrial projects of the most important products derived from the petroleum industries of the State of Kuwait. Dr. Mane Al-Sudairawi, KISR's Acting Director General, signed the memorandum on behalf of KISR; and Eng. Muhammad Eid Al-Adwani, PAI's Acting Director General signed it on behalf of PAI.

On this occasion, Dr. Mane Al-Sudairawi has stated that this memorandum confirms the continuous cooperation that has been going on between KISR and PAI in providing the best scientific expertise in various fields. He has added that we sign today a memorandum to prepare three opportunities of the most important products derived from the petroleum industries, which contribute to the development of petroleum technology, and the advancement of petroleum industries in the State of Kuwait.

Dr. Al-Sudairawi has said that KISR will implement the memorandum in eight stages, namely submitting proposals for investment opportunities, and determining preference and priority in

coordination with PAI. Then the proposed opportunities will be developed, proposals reviewed, investment opportunities prepared, feasibility study files submitted and reviewed with investors, and finally technology transfer studied.

Al-Sudairawi has added that this memorandum supports the government's action program, especially in its first axis namely activating the private sector, improving the business environment, public financial sustainability, developing the labor market, and promoting the localization of industries. KISR's DG has added that this memorandum supports the knowledge economy through the transfer of KISR's knowledge and innovations the private sector to manufacture and market these inventions and scientific innovations, and develop them to be effective in national industries. Thus, the national economy will be advanced, and economy developed with the power of knowledge, innovation, and technology.

Dr. Dawood Bahzad, Acting Executive Director of KISR's Petroleum Research Center (PRC), has aid that through the memorandum, KISR will provide the necessary advisory staff to discuss innovative investment opportunities and transform them from innovations and scientific techniques to large industries. He has added that such efforts will be exerted in cooperation with PAI and investors, with the aim of improving the quality of the industrialization process, production, and operation process in the petroleum industries in particular, and developing the labor market in other sectors, in general.

In conclusion, Dr. Mane Al-Sudairawi has stated that KISR encompasses numerous scientific and technical staff in the fields of scientific research in general, and applied fields in particular. He has clarified that KISR always seeks to create partnerships with the public and private sectors to provide scientific and technical consultations through specialized scientific expertise. KISR also encourages joint scientific research teams, and exchange expertise, experiences, and research systems to achieve national strategies.

Title: KISR and KOC Sign a Contract for the Ecological Monitoring Project for the Process of Restoring the Vegetation of Damaged Lands



News:

The Kuwait Institute for Scientific Research and Kuwait Oil Company, in cooperation with the Kuwait National Focal Point for Environmental Projects, signed a project related to restoring the vegetation cover and the ecological performance of the ecosystems of the lands affected by the Iraqi invasion of the State of Kuwait in 1990. Dr. Mane Mohammad Al-Sudairawi, Acting Director General of KISR, signed on behalf of KISR, and Mr. Khaled Nayef Al-Otaibi, Acting CEO, signed on behalf of KOC.

Dr. Mane Al-Sudairawi, Acting Director General of KISR, said that this project aims to monitor and observe the activities undertaken to restore the vegetation cover, resume the ecological performance of the ecosystems of the damaged lands, and evaluate their success in achieving the desired goal, which is the rehabilitation of desert ecosystems to what they were before the Iraqi invasion in 1990. He added that KISR will carry out ecological monitoring operations for the specified areas of Kuwait Oil Company. This monitoring includes scientific studies and research related to the studies of soil, native plants, biodiversity, studies of toxins, and the movement of

sand and dust in the areas under study, in addition to preparing a database related to the results of the project.

Al-Sudairawi explained that the duration of this project is 5 years, as the first year studies aim to provide preliminary scientific data on the general condition of the lands before rehabilitation. The monitoring and evaluation of the lands continues for another four years after the start of the rehabilitation and cultivation of the damaged lands, with the aim of monitoring the success of these rehabilitation operations of affected lands.

Al- Sudairawi affirmed that KISR is fully committed and ready with all its cadres to contribute to the success of projects related to the protection of the environment -both its land and sea- and its rehabilitation and reclamation, in a way that serves our homeland Kuwait and achieves the expected and desired goals for the future Kuwait.

He pointed out that the Kuwaiti desert environment was damaged by the military operations that took place in 1990 during the Iraqi invasion, which was not limited to fires and deliberate destruction, but extended to plants and wildlife in the region. This led to its deterioration from which we are still suffering, in addition to the effects of urban expansion, human activity and climate change, which greatly affected the deterioration of the desert environment in the State of Kuwait.

He concluded by saying that KISR, in cooperation with KOC and related authorities, works to reduce this deterioration, and rehabilitate these desert ecosystems by monitoring the vegetation cover and conducting scientific research related to improving the desert environment.