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Leadership of the scientific research in controlling brucellosis in Sudan

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Background: Brucellosis is an infectious bacterial disease of domestic animals, such as cattle, sheep, goats, camels and dogs, which is caused by *brucellae* and sometimes results in spontaneous abortions in newly infected animals. Humans are at risk for the disease, especially in areas where the infection in animals has not been brought under control, heat treatment procedures of milk are not routinely applied, consumption of raw milk and poor hygienic conditions favor human infection. **Methods:** Brucellosis was reported in Sudan through both passive and active surveillances in humans and almost all domestic animals, particularly cattle, sheep, goats and camels. Limited wild life studies also revealed the disease in wild reservoirs. The socio-economy preliminary data of the disease in livestock and man was also obtained and statistical analysis from the results confirms the high prevalence of brucellosis and that the incidence is more than what is reported from the previous data. Brucellosis is now focused on in Sudan as the priority endemic disease with serious national and regional hazards. A planned participatory joint multi-disciplinary research program was adopted, to consider human health and livelihood, and animal health and production perspectives. The stamina of this program is the preparedness of the concerned responsible authorities in Sudan for maintaining the national program through providing baseline disease data on the cumulative incidence of human brucellosis, the efficient laboratory diagnostic service for surveillance and disease supervisor testing, a wide spectrum of *brucella* tests are provided including isolation, characterization, serological and molecular methods.

Standardized tests are also provided to permit the safe trans national and international movement of animals to meet trade requirements. The vital element in these activities included in the control program is the institutional capacities and biological production capabilities of Sudan for producing good quality vaccines and antigens which strengthen the practice by mass provision of these biologicals. Both *B. abortus* S. 19 and *B. melitensis* Rev1 vaccines are produced along with the Rose Bengal Plate Test, the Serum Agglutination Test and The Milk Ring Test Antigens. A national standard serum was also developed for various purposes. There is a well-established bank of sera and local *brucella* isolates from human and different animal species and from different parts of the country which is in use for different research and development activities, namely validation of tests with the regional and international reference veterinary laboratories for high reproducibility of the tests and epidemiological studies.

Summary: The paper discusses details of the principal steps and analyzed data under taken to assure the role of the participatory joint initiative of multi-disciplinary research program, diagnostic activities and production of diagnostics and veterinary vaccines in controlling brucellosis in the Sudan.

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