Island Soqotra: a unique source of medicinal plants with anticancer, antimicrobial, antiviral and antiprotozoal potentials.

Dr. Ramzi A. Mothana
Department of Pharmacognosy, College of Pharmacy, King Saud University, Riyadh, Saudi Arabia
Department of Pharmacognosy Faculty of Pharmacy, Sana’a University, Sana’a, Yemen

Despite the immense technological advancement in modern medicine, a large proportion of Yemen population, as elsewhere in many other developing countries, still rely on traditional healing practices and medicinal plants for their daily healthcare needs. The vegetation and floral biodiversity of Yemen including the island Soqotra provides Yemeni traditional healers with an impressive pool of ‘natural pharmacy’ from which plants are selected as remedies, or as ingredients to prepare herbal medicines (phytomedicines) for a plethora of human and veterinary disorders. Soqotra is considered the "jewel" of biodiversity in the Arabian Sea. Surveys have revealed that more than a third of the plant species of Soqotra are found nowhere else. Different localities of Soqotra were visited between 2004 and 2008 and many traditional healers were interviewed. So about 50 plants were collected, extracted with methanol and hot water and evaluated for their in vitro anticancer activity against three human cancer cell lines (A-427, 5637 and MCF-7) and for their antimicrobial activity against Gram-positive and Gram-negative bacteria as well as multiresistant Staphylococcus strains. Moreover, the antiviral activity of 25 plants has been assayed in two in vitro viral systems, influenza virus type A/MDCK cells and herpes simplex virus type 1/Vero cells, at non-cytotoxic concentrations. The methanolic extracts of Ballochia atrovirgata, Buxus hildebrandtii, Dendrosicyos socotrana, Dracena cinnabari, Eureiandra balfourii, Hypoestes pubescens, Jatropha unicostata and Punica protopunica Withanina aduensis and Withania riebeckii exhibited the highest toxicity on all tumor cell lines with IC50 values ranging between 0.29 and 8.2 µg/ml.

The greatest antimicrobial activity was found by the methanolic extracts of Boswellia ameero, Boswellia dioscorides, Boswellia elongata, Boswellia socotrana, Buxus hildebrandtii, Commiphora ornifolia, Commiphora parvifolia, Euclea divinorum, Euphorbia socotrana, Jatropha unicostata, Kalanchoe farinacea, Leucas samhaensis, Leucas virgata, Punicaria stephanocarpa, Punica protopunica, Rhus thrysiflora, Teucrium sokotranum, Withania adunensis and Withania riebeckii.

The methanolic extracts of Boswellia ameero, Boswellia elongata, Buxus hildebrandtii, Cissus hamaderohensis, Cleome socotrana, Exacum affine, Jatropha unicostata and
Kalanchoe farinacea showed anti-influenza virus type A activity with IC50-values from 12.5 to 0.7 μg/ml. In addition, 15 plants of the 25 investigated exhibited anti-HSV-1 activity.