444TH INAUGURAL LECTURE

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BENEVOLENCE OR MALEVOLENCE: THE CURIOUS WONDER OF NATURAL AGENTS ON REPRODUCTIVE PHYSIOLOGY

ABSTRACT

The modification of reproductive physiology by natural agents at three main levels namely; general reproductive functions (both male and female), erectile function, and developmental programming is presented with different experimental findings. In the course of these studies, a simple microscopic technique for investigating the effects of medicinal plant extracts on male reproductive functions was standardized. Similarly, an *in vitro* experimental model for investigating the mechanisms of action of hormones, drugs and natural agents on reproductive functions was developed. Using these methods, the benevolent and malevolent impacts of extracts and isolated pure compounds from medicinal plants, namely: *Quassia amara* (Amargo, Bitterwood), *Azadirachta indica* (Neem tree, Dongoyaro), *Alstonia boonei* (Stool wood, Ahun), *Morinda lucida* (Oruwo), *Ricinus communis* (Ilarun), *Carpolobia lutea* (Osunsun, Sexual invigorator), *Sphenocentrum jollyanum* (Akerejupon) and *Tridax procumbeans* (Sabarumo); as well as those of certain stimulants; nicotine and caffeine, on male reproductive physiology were explored. In addition, the actions of *Ricinus communis* oil, *Carica papaya* seeds and cassava diet on female reproductive physiology were reported. Interventions against the malevolent activities of synthetic agents and environmental toxicants were also provided with natural agents such as *Cocos nucifera* (coconut) water, *Citrullus lanatus* (watermelon), vitamins C and E.

Many of these natural agents are of medicinal plants' origin. The antiulcer, antianaemic, penile erectogenic, antihypertensive and other activities of these natural agents were reported in experimental animal models in these studies. This therefore justified the use of some of them in traditional medicine for the treatment of related ailments. However, while many of the natural agents are useful for the treatments of these ailments, they have been found to disrupt certain normal reproductive functions. It is therefore curious to wonder why a plant or its secondary metabolite with many benevolent activities would produce such malevolent activities on reproductive physiology in male. These properties if well harnessed, can be useful for drug development. Part of these series of studies laid emphasis on the development of a safe yet potent male contraceptive drug from *Quassia amara* and its bioactive compound, quassin. The good news is that, if properly explored, the side effects can either be eliminated or even turned into benefits for mankind. In this report, the observations and mechanisms for the benevolent activities of some natural agents, and possible interventions for the malevolent activities of these natural agents through postulating the role of recovery, the use of some other natural agents and synthetic agents particularly antioxidants were proffered.

The highlights of this research endeavour through natural agents is that their benevolence can only be maximized for mankind when better funding and conducive research environments are created. These would enable the translation of such constantly emerging research findings into improved health and wealth of the nation. The University of Ibadan is blessed with capable manpower, it should therefore increase funding to improve research facilities and activities. If Nigeria will advance, the Government must invest heavily in Research, Development and Education.

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