patients and medical professionals, but a better understanding of the benefits of different food components is essential. (Poly)phenol rich foods offer promise for the treatment and prevention of cardiovascular disease.

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Figure 1: (Poly)phenol classification

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NEW INVESTIGATOR PAPER

Cinderella called MR: Low dose spironolactone as therapeutic target against cardiometabolic disorder induced by estrogen deficiency

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Globally, cardiometabolic disorder is assuming an increasing role as a major cause of morbidity and mortality. Cardiometabolic disorder identifies a cluster of metabolic disorders that occur together; affected individuals have up to 2 times higher risk of a major cardiovascular event, 3 times higher risk of chronic renal insufficiency, more than 4 times higher danger of developing type 2 diabetes mellitus, incidence of congestive heart failure and cardiovascular mortality. Sex differences seem to

have a say in the development of cardiometabolic disorder; a women's risk increases sharply during menopause, a state of estrogen deficiency. The fact is this: many women will spend the second half of their lives in a state of estrogen deficiency. Thus, the contribution of estrogen deficiency in the pathobiology of multiple chronic diseases in women is a conceivable therapeutic challenge of the 21st century and worth looking into. This made me have a keen interest in this aspect of science as

there is the need to address this growing problem and the only way is improved understanding of how estrogen deficiency contributes to cardiometabolic disorder. This promises to open a novel therapeutic application for an increasing large segment of the female population.

The mineralocorticoid receptor is a member of the steroid receptor family and is the effector of mineralocorticoid's cellular response. The mineralocorticoid receptor is referred to as the 'Cinderella' of the steroid receptors due to the fact that not much attention was given to it until it was identified that its activation was involved in cardiovascular disease¹, hence, prompting me to join this 'new wagon' of interests.

I joined the HOPE cardiometabolic research unit of the Department of Physiology, University of Ilorin, Nigeria under the joint supervision of Professors Soladoye and Olatunji to explore and see if there is a connection between the activation of the mineralocorticoid receptor and challenges that comes with estrogen deficiency, and to see if blocking of the mineralocorticoid receptor can proffer solution to this challenge. Before I joined the unit, my supervisors had worked for some time on combined oral contraceptives and going by their previous findings, combined oral contraceptives can create estrogen deficient state, hence, giving me one model to suppress the estrogen functions of ovaries. I found that combined oral contraceptives effectively induced estrogen deficiency and with it, noticeable cardiometabolic disorder; this was reversed with the treatment of low dose spironolactone. Whilst mineralocorticoid receptor blockers work through the aldosterone pathway, I found that the therapeutic potential of the low dose spironolactone can be independent of aldosterone-pathway but through a corticosterone – dependent pathway². I decided to create an experimental surgical rat model by totally removing the ovaries and treating with or without combined oral contraceptives to mimic a postmenopausal status. Removal of the ovaries activated the mineralocorticoid receptor and induced cardiometabolic disorder³. Treatment with low dose spironolactone however, effectively replenished the depleted estrogen and reversed the cardiometabolic disorder induced by estrogen deficiency, also through corticosterone dependent pathway. The interesting thing here is this, low dose spironolactone could actually be used as hormone replacement therapy. More so, combined

oral contraceptives seemed to effectively reverse the cardiometabolic disorder induced by surgical removal of the ovaries, however, combination of the combined oral contraceptives with the low dose spironolactone in a state of estrogen deficiency works more effectively³. With further curiosity, I went ahead and decided to look at the effectiveness of the low dose spironolactone in an experimental model of polycystic ovarian syndrome, one of the major causes of infertility in women of reproductive age! The low dose spironolactone completely blocked the activation of the mineralocorticoid receptor and improved the cardiometabolic disorder induced by polycystic ovary syndrome^{4,5}. This indeed shows that the mineralocorticoid receptor has its 'Cinderella' in low dose spironolactone.

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