An Estrogen by Any Other Name . . .

As an editor, and now Editor-in-Chief of this journal, as well as a reader of papers in endocrinology, I continue to see a problem with nomenclature that I believe needs to be remedied. The term estrogen has taken on numerous meanings, and this has led to a confusing, imprecise literature, and it has confused our colleagues and the public. Some authors use it synonymously with estradiol-17β, whereas others use it to refer to any compound with estrogenic properties in a particular system. However, estrogen is not a particular hormone. Rather, it refers to a class of compounds with estrogenic activity, defined by a variety of criteria. A compound could be categorized as an estrogen based on its binding to a particular estrogen receptor, by its effects in classical in vitro assays such as the uterotrophic or vaginal cornification assays (1), by its performance in in vitro assays (2), or by other biological effects (e.g. influences on female secondary sex characteristics or on neuroendocrine responses). Some of the common endogenous hormones from the class, estrogens, are estradiol-17β (commonly referred to as estradiol), estrone, and estriol. There are also synthetic estrogens, such as those that are found in some oral contraceptives, as well as xenoestrogens, compounds that are not endogenous to animals. These include the phytoestrogens, like genistein, as well as synthetic compounds, such as the endocrine disruptor used in plastics and epoxy resins, bisphenol A. The class, estrogens, also includes the conjugated estrogens, such as 17β-estrone sulfate, many of which are purified from horse urine and are found in Premarin and Prempro (3).

The number, variety, and sources of compounds that belong by one criterion or another to the class of hormones, estrogens, is large. Referring to all of them as estrogen does a tremendous disservice to our field. It also confuses the public, which needs to understand the nuances of different estrogens to make informed decisions about medical treatments.

I suggest the following terminology for this journal, and I hope that a similar convention is adopted by others. The term estrogens, not estrogen, should be used when referring to the class of hormones, estrogens, is large. Referring to all of them as estrogen does a tremendous disservice to our field. It also confuses the public, which needs to understand the nuances of different estrogens to make informed decisions about medical treatments.

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References


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