S19-5 Structure-dependent nuclaer receptor ligand activities of organometals

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We previously demonstrated that tributyltin (TBT) and triphenyltin (TPT), which are suspected of disrupting endocrine function in vertebrates and invertebrates, act as a nanomolar dual agonist for both retinoid X receptor (RXR) and peroxisome proliferator-activated receptor (PPAR) γ. In addition, the signaling pathway of these nuclear receptors is a critical event in the endocrine disruption by these organotins. These functions of the organotins have been unexpected because the chemical composition and three-dimensional molecular structure of TBT and TPT are different from those of known natural and synthetic nuclear receptor ligands. Consistent with the differences, our recent observations suggest that the protein–ligand interactions between organotin compounds and RXR and PPARγ may be much different from the interactions between natural RXR agonist, 9-cis retinoic acid, and a highest-affinity thiazolidinedione, rosiglitazone, respectively. Here, we will discuss the potency of organometals including organotins as an agonist for these nuclear receptors and the relationship between their structure and functions.