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## P203. SIRTUINS AS DRUG TARGETS AFFECTING MITOCHONDRIAL FUNCTIONS

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Sirtuin (SIRT) is known as a silent information regulator. They are NAD + dependent class III histone deacetylases (HDACs) which have been linked to cellular function such as metabolism, aging, cancer and cell life. In mammalian, there are seven members of the sirtuin family and their intracellular localizations are different. For example, SIRT1, SIRT6 and SIRT7 locate mainly in the nucleus, SIRT2 locates in the cytoplasm, SIRT3, IRT4 and SIRT5 locate mainly in the mitochondria. Although subcellular localization of SIRT1 is in the nucleus, it also regulates mitochondrial function and metabolic homeostasis including oxidative phosphorylation and mitochondrial biogenesis. As for mitochondrial sirtuins, SIRT3 is often linked to thermogenesis which play an important role in controlling reactive oxygen species originating from mitochondria and it locates in heart, brain, testis, liver, kidney, muscle and adipose tissue. SIRT4 is often linked to insulin secretion and it is expressed in all tissues but it locates in pancreas, liver, brain with highest level. SIRT5 is also often linked to urea cycle. The mitochondrial sirtuins are considered attractive drug targets due to regulate significant metabolic pathways and can be stimulated with molecules which effect activity of Sirt. In this context, these molecules can be useful for treatment of mitochondria-related diseases. The regulation of sirtuin enzymes and their implications in mitochondrial functions have been discussed in present review.

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