Title: Quercetin Modulates ROS-Induced Oxidative Stress and Notch Signaling Activation in SK-N-MC Cells
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<p style="text-align: justify;" class="MsoNormal"><span style="font-size: 12pt; line-height: 115%; font-family: "times new roman"; &quot;serif&quot;;"><strong>Introduction:</strong> There is rising evidence for significance of oxidative damage to the brain in a wide variety of neurodegenerative disorders. It is by now well accepted that reactive oxygen species (ROS)-induced oxidative stress triggers numerous signaling pathways including Notch signaling which are involved in neurodegenerative diseases. Thus, antioxidants aimed at preventing or delaying oxidative stress might be a reasonable choice for treatment of these diseases. Flavonoid quercetin is one of the most prominent dietary antioxidants. In addition to its antioxidant effects, quercetin may be acting by modulating intracellular signaling pathways. <strong>Methods:</strong> Cells treated with hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) to induce oxidative stress. The free radical scavenging capabilities of quercetin was studied through MTT assay and antioxidant enzymes activity assay. The extent of lipid peroxidation, protein carbonyl formation and intracellular ROS level as markers of oxidative stress were also studied. Western blot analysis was used to evaluate Notch expression. <strong>Results:</strong> Our results showed that pretreatment of the cells with quercetin enhanced the extent of viability of a dose-dependent manner. H<sub>2</sub>O<sub>2</sub> significantly reduced the viability of cells. Moreover, ROS led to reduction of antioxidant enzymes activity. In other words, quercetin protected cells against ROS-induced cell death by down-regulation of lipid peroxidation and protein carbonyl formation as well as restoration of catalase activity. Western blot analysis revealed that ROS activates Notch signaling. <strong>Conclusion:</strong> Our results indicated that quercetin can be a promising candidate in antioxidant therapy for ROS-induced neurodegenerative diseases. Collectively, quercetin abrogated the ability of Notch to potentiate oxidative death in neuroblastoma cells. </p>
Neurodegenerative disease, Reactive oxygen species (ROS), Antioxidant, oxidative stress

Presentation: Poster