Apple, Cherry, and Blackcurrant Increases Nuclear Factor Kappa B Activation in Liver of Transgenic Mice

Nuclear factor kappa B (NF-B) is essential in normal physiology, and several human disorders involve inappropriate regulation of NF-B. Diets dominated by plant-based foods protect against chronic diseases, and several food derived compounds have been identified as promising NF-B modulators. We investigated the effects of diets supplemented with apple, blackcurrant, or cherries on lipopolysaccharide (LPS)-induced NF-B activation in transgenic NF-B-luciferase mice. Whole body and organ specific NF-B activities were determined. The mice had ad libitum access to the respective experimental diets for 7 days. On Day 7, all mice were given an LPS-injection (2.5 mg/kg), and NF-B activation was monitored by in vivo imaging for 6 h. After imaging, blood samples were taken, the mice were euthanized, and ex vivo imaging of organs was performed. Compared to the control group, the apple and cherry groups had slightly higher whole-body NF-B activation at 4 h, and all 3 experimental groups had higher NF-B activation at 6 h. LPS-induced NF-B activation in liver was increased with all 3 experimental diets, but no effects were observed in other organs. Our findings indicate that high intakes of lyophilized fruits modulate in vivo NF-B signaling in the liver following LPS-induced stress; however, consequences of this NF-B modulation in hepatic tissue needs further investigation.