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Introduction

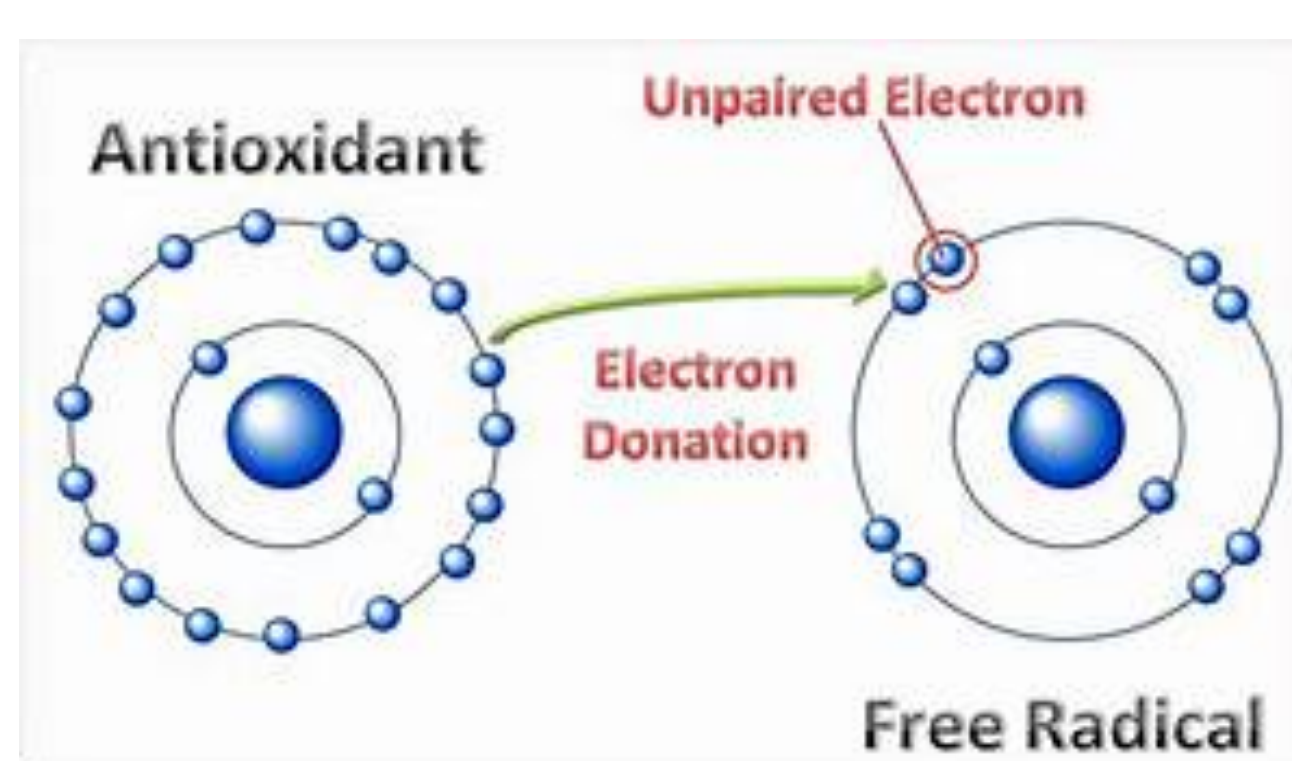
Nuts have been used as a food source since the early 7000 B.C. Among all nuts, Pistachios have one of highest amounts of iron, potassium and antioxidants such as: vitamin E, lutein, carotene, and tocopherol. This makes Pistachios a great choice to add to any healthy diet. Roasted Pistachios are tastier than Raw ones and are available in different flavors such as salty, hot, sour, etc. **But do they keep their nutritious factors during the roasting process?** In order to answer this question, two different types of Pistachio, raw and roasted were examined and interesting results achieved.



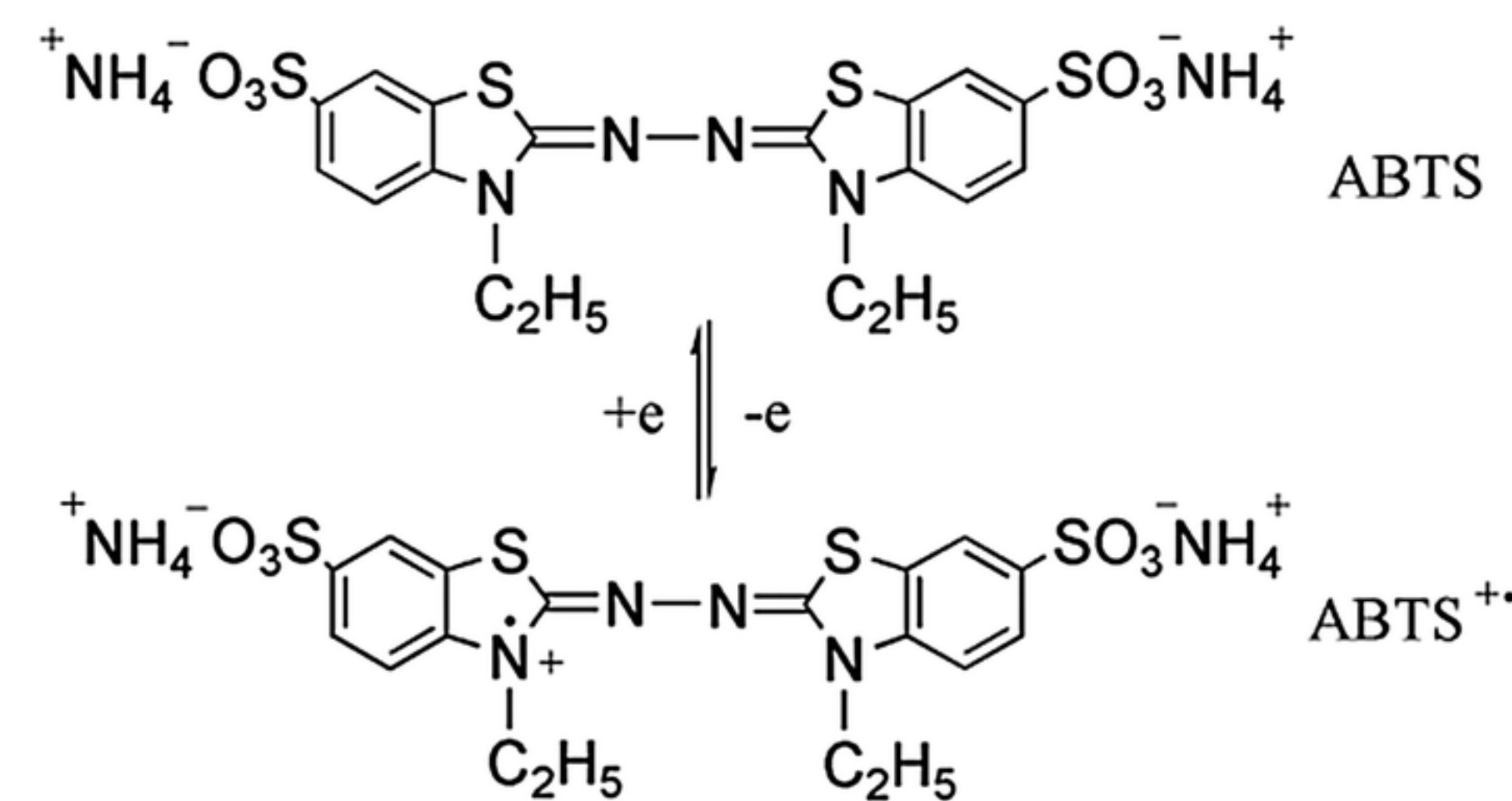
During the chemical reaction called oxidation, free radicals are produced. If these reactions occur in the human body, it may cause damage to cells. Antioxidants inhibit oxidation by donating their electrons to free radicals and terminate the chain before vital cells are damaged.



Oxidative damages by free radicals are associated with diseases such as **Cancer, Alzheimer's, Atherosclerosis, Diabetes and Ocular disease;** which may be prevented by consumption of antioxidants.



The Beer-Lambert Law states that the quantity of light absorbed by a substance is directly proportional to the concentration of the substance which is solved into a fully transmitting solvent 2,2'-azino-bis.



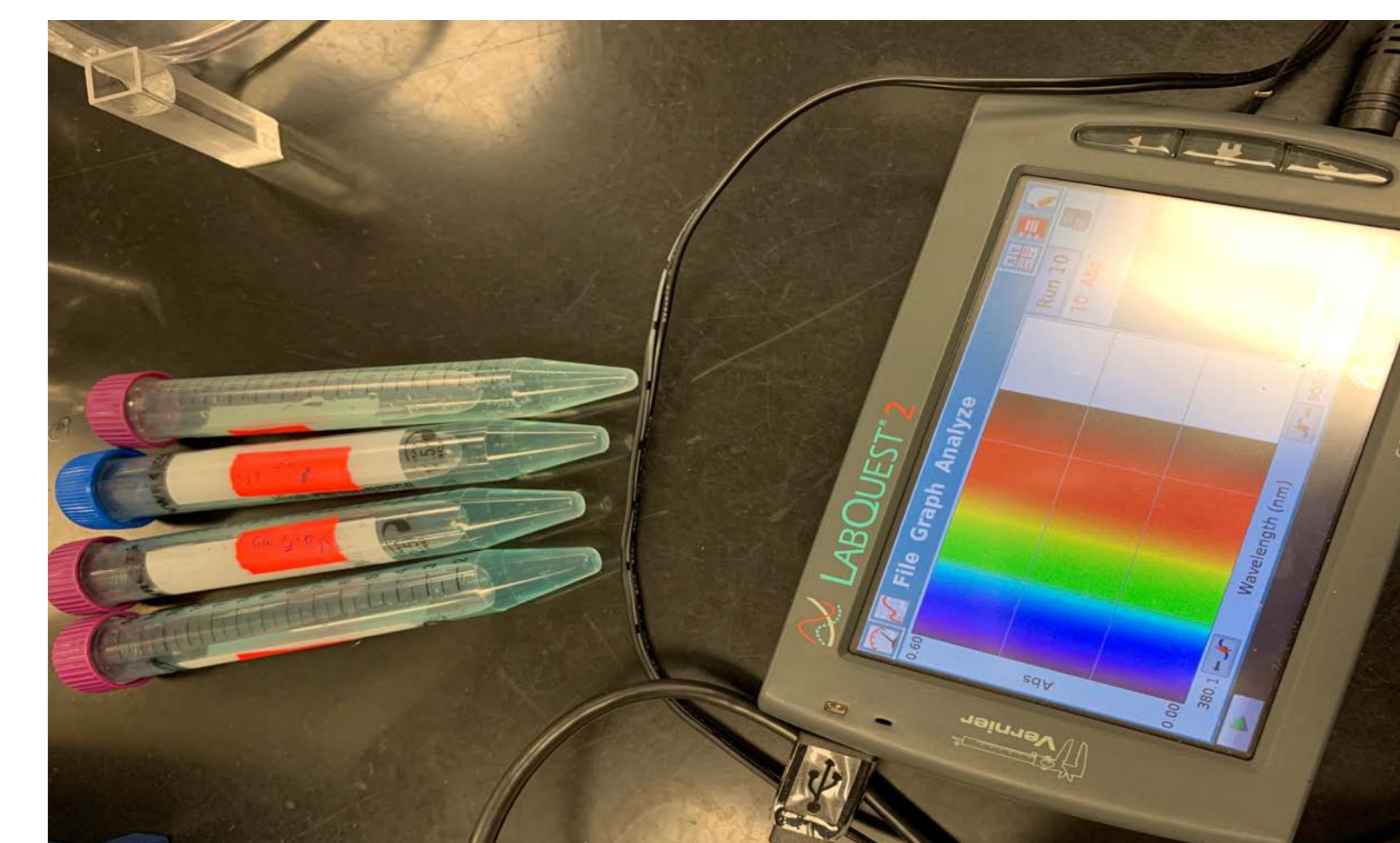
ABTS is a colorless chemical compound which is used in a very fast and inexpensive method called DDPH to determine the ability of compounds to act as free radical scavengers or hydrogen donors in order to determine the amount of antioxidants. **ABTS and Potassium Persulfate** undergoes oxidation reaction produce **ABTS⁺**.



After **ABTS⁺** and antioxidants react, the reagent **ABTS⁺** neutralizes to produce **ABTS**. Therefore, the amount of antioxidant can be determined by examining the mixture of any solution with **ABTS⁺** in spectrometer. As much as absorbance is greater, less antioxidant presented in the initial solution. On the other hand lower light absorbance means there is a high amount of antioxidant in solution.

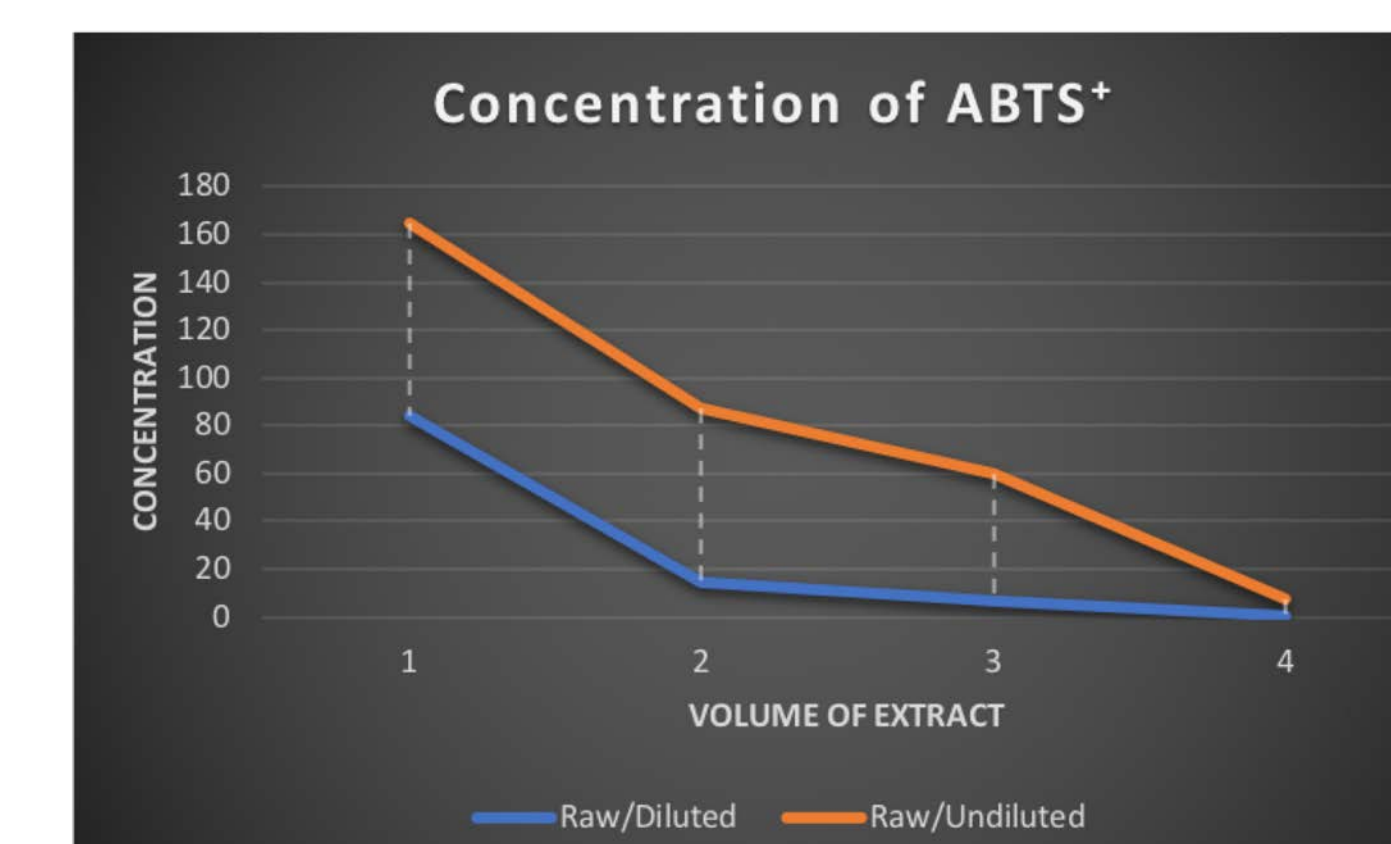
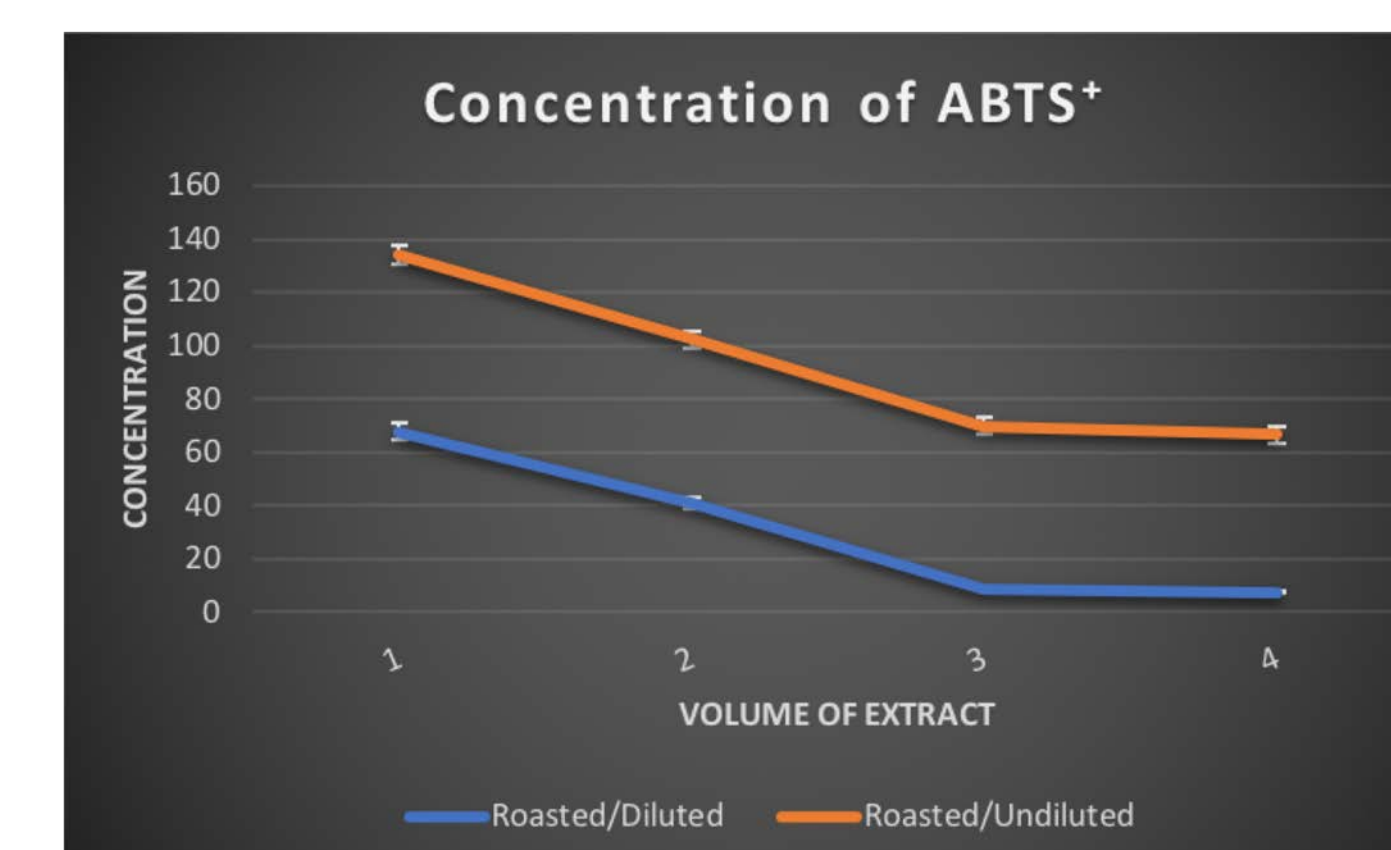
Materials and Methods

Samples of raw and roasted pistachios were collected and grinded. 1 gr of Roasted sample transferred to a 15 mL centrifuge tube, mixed with 10 mL of acidic methanol and centrifuged for two minutes. This was then filtered and transferred into undiluted and diluted tubes. These solutions were then mixed with **ABTS⁺** and evaluated with a Spectrometer to determine the amount of absorption and antioxidant levels. The absorbance of each solution was saved based on its wave length.



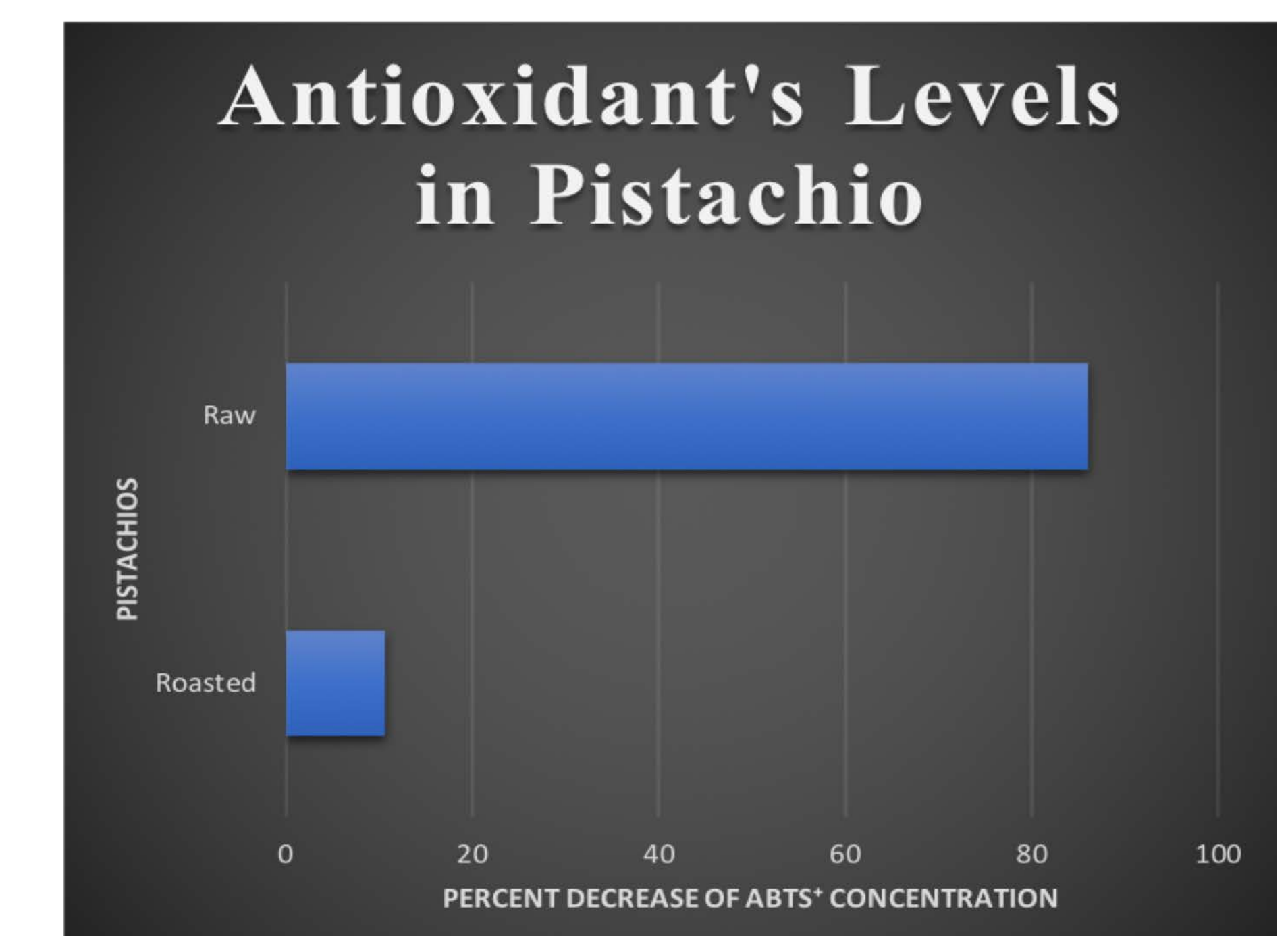
Results

Results show that the concentration of **ABTS⁺** decreases during the process. Therefore the amount of antioxidant of Pistachios increases by increasing the volume. Based on charts below, the amount of antioxidants in Raw Pistachios is significantly more than Roasted ones.



Conclusions and Discussion

Roasted and Raw Pistachios both contain significant amount of antioxidants. Roasted Pistachio loses some amount of antioxidant during the roasting process. Thus, it is a lot more nutritious to eat raw pistachios over roasted.



References

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