Colorimetric assay for TiO$_2$ nanoparticles detection in complex matrices as food samples

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Background

- TiO$_2$ as an approved food additive can appear in form of NPs
- Detection of NPs challenging
- Colorimetric assay presents an easy way for detection despite complexity of the sample

Aim

- To adapt method from literature [1] for TiO$_2$
- Calibration for food grade TiO$_2$
- Crystalinity comparison

Optimization

- TiO$_2$ concentration
- Importance of stirring
- Order of chemicals addition
- Methylene blue concentration
- Buffer

We studied reaction kinetics during the aging of HEPES

Possible explanation

The part which is the most attracted to create hydrogen bond has too much sterical obstacles.

Future plans

- To accelerate the kinetics with higher temperature
- FTIR

Literature


Conclusion

- Method works
- TiO$_2$ less active than Ag
- All optimized parameters

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