From pomegranate peel to nanoparticles

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Food waste is a growing problem in many parts of the world, but discarded fruit peel, in the case of pomegranates, could be put to good use in the burgeoning field of nanotechnology according to research published in the *International Journal of Nanoparticles*.

Punica Granatum, the pomegranate is native in northern India and has been cultivated and naturalized over the whole Mediterranean region since ancient times. The fruit extract is a rich source of highly potent antioxidants.

Now, botanist Naheed Ahmad of Patna University and physicist colleague Seema Sharma of AN College, also in Patna, India, are working together to exploit the skin of pomegranates as a reducing agent for making silver nanoparticles. The team says their approach to these widely researched and technologically invaluable nanoparticles represents a more environmentally benign method than the use of "chemical" reducing agents and industrial solvents. The process also precludes the need to heat the reaction mixture as it proceeds at ambient temperature.

The team suspects that biological co-factors present in the pomegranate biomass act as substitutes for more conventional chemical reagents in nanoparticle formation from the silver nitrate starting material. They used UV-Vis spectroscopy, transmission electron microscopy, selected area electron diffraction, X-ray diffraction (XRD) and Fourier-Transform infrared spectroscopy to analyze the nanoparticles formed by the reaction. The particles generated are about 5 nanometers in diameter.

(One nanometer is a billionth of a meter).

More information: "Biosynthesis of silver nanoparticles from biowaste pomegranate peels" in *Int. J. Nanoparticles*, 2012, 5, 185-195

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