Nature's amazing chemistry: extraction from sustainable sources and application in cosmetics

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Nature makes amazing chemistry and increasing numbers of naturally-derived ingredients are appearing in cosmetic products, but with little understanding of their activity or composition. Actives from plant material were isolated using green chemistry principles and applications developed for sustainable and functional cosmetics. A range of natural extracts derived from grape (*Vitis vinifera* L.) skin waste, including resveratrol and several flavonols, were developed as actives for antiaging skincare products and demonstrated high antioxidant activity and skin appearance benefits. Anthocyanins colorants from blackcurrant (*Ribes nigrum* L.) skin waste were extracted and purified whilst preserving glycosylation enabling advantageous formulation, stability, and application; these colorants were effectively employed as hair colorants showing excellent colour properties and good wash fastness. A novel formulation was developed to allow biopolymers extracted from seaweed to be effectively employed in high ethanol containing solvent systems for hair styling; performance was shown to be superior to PVP/PVP-VA hair styling products.