How Do Different Natural Dyes React with Variations in Fabric and pH?

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An experiment was conducted to find what different natural elements create different pigments and how pigments take to varied fabrics. Avocado pits make pink, turmeric makes yellow, beetroot makes red, and coffee makes brown. This research is important because of the environmental benefits in natural dyes, and fast fashion is a leading contributor to problems like climate change by putting harmful chemicals from artificial dyes into the environment. Fast fashion is responsible for 20% of the world's water pollution. If the pH is changed to be more acidic, the colors will generally become diluted and lighter. The basic dye solutions will be muddier and darker. Some challenges encountered was that not all dye batches were produced and tested on the same day. After research concluded, materials were gathered. Turmeric, coffee, red cabbage extract, black tea, and frozen spinach served as dyes. Also collected were jars, spoons, fabric, chemical variants and a large pot. Once the materials were collected, each dye was prepared and separated into separate jars. Each jar had a different variant added into it, as well as a control jar. Fabric was allowed to soak for one hour in each solution, and then removed and rinsed. Dye inside the jars was kept for pH analysis. The dyed fabric results were not similar to the hypothesis. Throughout all dyes, the iron filing solution was the darkest. The acidic dye baths produced an overall darker color, while the basic dye baths produced a lighter color.

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