

## **Marigold dye project**

NOTE: In contrast to the science project, we will here make an aqueous extract of the flower petals. Thus, we do not know if the yellow compound extracted here is identical to the one extracted by organic solvents. Feel free to make a small aqueous extract alongside your science project to address this question by TLC and spectrophotometry.

### **Read:**

**D. Jothi. EXTRACTION OF NATURAL DYES FROM AFRICAN MARIGOLD FLOWER (TAGETES ERECTA L) FOR TEXTILE COLORATION.** AUTEX Research Journal, Vol. 8, No2, June 2008.

p. 34-51 in: **Jenny Dean “Wild Color”**

### **Materials:**

Marigold flowers, dry  
Marigold flowers, fresh  
Large stainless steel pots  
Heat plate  
Household thermometer  
Plastic tubs  
Strainers  
Drying rack  
Fabric samples: Silk scarves, silk pieces, wool samples, student materials  
Household Alum  
Household cream of tartar  
Tap water  
Dishwashing liquid  
Measuring spoon set  
Saran wrap  
Lab balance  
Weight boats  
Digital camera

### **Methods:**

1. Scouring of dye goods:
  - a. Fill pot with tap water, add small squeeze of dishwashing liquid and add dye goods.
  - b. bring to simmer (190-200 F).
  - c. simmer for ca. 30 min
  - d. rinse in hot tap water
  - e. let slowly cool down but keep wet, or transfer to mordanting pot

2. Mordanting of dye goods:
  - a. Use 4 gallons of liquid for 1 pound of fibers/fabrics (400-500 g).
  - b. Use 1Tbs Alum (Aluminum sulfate, aluminum ammonium sulfate, or aluminum potassium sulfate)and 2 tsp Cream of Tartar (Sodium pyrophosphate) per gallon water.
  - c. Boil ca. 200 ml of water, and dissolve first Cream of Tartar, then Alum
  - d. Add to dye pot, stir
  - e. bring solution to simmer
  - f. add hot, pre-soaked dye goods. If the dye goods have been cooled down, add them together with the mordants to the cold water and bring everything to a simmer.
  - g. Simmer for 60 min.
  - h. Remove from heat and soak fibers in slowly cooling mordant overnight.
  
3. Dye extraction and dyeing (tea brewing method):
  - a. Use 4 g of dried marigold petals per gallon of water.
  - b. Place petals into dry stainless steel pot
  - c. Bring to boil the amount of water to use.
  - d. Pour boiling water onto petals, stir, cover with lid and steep for 10 minutes.
  - e. Pour dye tea through strainer into second pot.
  - f. Add dye goods, weight down with strainer
  - g. "incubate" for ca. 90 minutes, or overnight.
  - h. rinse dye goods in equal-temperature water
  - i. dry on drying rack