How to precipitate DNA with sodioum acetate using Isopropyl alcohol ?

While sodium acetate and ethanol are the most common combination for DNA precipitation, isopropanol can also be used for precipitation. The overall process is similar, but with a few key differences:

Here's how to precipitate DNA with sodium acetate using isopropanol:

Materials:

- Microcentrifuge tube
- Your DNA sample
- 3M sodium acetate, pH 5.2 (or prepare according to a protocol if not readily available)
- 100% Isopropanol (preferably pre-chilled to -20°C)
- Optional: Linear acrylamide or glycogen (as a carrier for low DNA concentrations)
- Centrifuge

Procedure:

1. **Follow steps 1-3 from the previous method:** Transfer your DNA sample, add sodium acetate (1/10th volume), and include a carrier (if needed) to the microcentrifuge tube.
2. **Add Isopropanol.** Instead of ethanol, use a volume of isopropanol equal to the original volume of your DNA sample. So, if your DNA sample was 100 µl, add 100 µl of isopropanol.
3. **Mix well** by gently inverting the tube several times. Avoid creating bubbles.
4. **Incubate the mixture.** Similar to ethanol, incubate the tube in a freezer at -20°C for at least 30 minutes. Longer incubation (up to overnight) can improve yield, especially for low DNA concentrations.
5. **Centrifuge the mixture.** Use a microcentrifuge at high speed (around 14,000 x g) for 15 minutes at 4°C. This will pellet the DNA at the bottom of the tube.
6. **Carefully remove the supernatant (liquid) without disturbing the pellet.** You can use a pipette to remove most of the liquid, then aspirate any remaining liquid with a fine-tipped tip.
7. **(Optional) Wash the pellet.** Follow steps 9 and 10 from the previous method using 70% ethanol (room temperature) to wash the pellet. This step helps remove residual salts.
8. **Air-dry the pellet** briefly as described before.
9. **Resuspend the DNA pellet** in a desired volume of TE buffer (Tris-EDTA buffer) or distilled water for downstream applications.

Important points to note:

- Isopropanol generally precipitates DNA less efficiently than ethanol [1]. You may need to optimize incubation times or centrifugation conditions for your specific needs.
- Isopropanol co-precipitates salts more readily than ethanol, so the optional wash step with 70% ethanol becomes more important to remove residual salts that can interfere with downstream applications.

It's recommended to consult a scientific reference or protocol for detailed information and potential variations in this method.