

# PROCAINE HCL FOR INJECTION

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## Purpose:

- Local anesthetic of the ester family
  - Sodium channel blocker, NMDA receptor blocker, nicotinic acetylcholine receptor antagonist, serotonin receptor antagonist
- <https://go.drugbank.com/drugs/DB00721>

## Conditions Treated:

- Pain

## Storage:

- Procaine USP 99% powder should be stored at 4°C (Refrigerate) beyond the certified expiry date up to 10 years. Suggested storage of large quantity in smaller bottles of 100 grams. Ensure an FDA-approved document is present in each bottle. Allow bottles to acclimate to room temperature for 10-15 minutes before opening the bottle to prevent condensation, which will add moisture to the procaine.
- Preservative-free 2% procaine solution should be stored at 4°C (Refrigerate)

## Equipment Required:

- Pyrex beakers, various sizes, e.g. 50ml, 100ml, 250ml
- Volumetric flasks or graduated cylinders for accurate measurement e.g. 100ml, 250ml.
- 10ml sterile syring, 21G needle
- Magnetic stirring mechanism with Teflon coated magnetic or glass stirring rods
- Digital scale with readability, 100g or 1000g capacity, accurate to 1mg
- Laminar flow hood for compounding procaine that will be stored beyond 1 year
- Stainless steel spoons, various sizes

## Mixing Procedure:

1. All equipment that will come into contact with the medication must be sterilized (e.g. clean with 70% isopropyl alcohol or use autoclave).
2. Determine the volume of procaine 2% solution you want to prepare (see table below).
3. Select a suitable sized beaker, place beaker on digital balance and tare to zero. Then add the required weight of procaine (see table below) using stainless steel spoon.
4. If Sodium Acetate and Sodium Chloride standards are being used, for each ingredient, pour 1 litre into the beaker and add 1. If Sodium Chloride and Sodium Acetate standards are being used, proceed with next steps.
5. Add sterile saline or water to the mixture (see table), approximately 1000ml of the final volume. Check additive final volume is greater than the final volume.

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6. If sodium bicarbonate 8.4% solution is being used, add the correct volume at this point (based on the table).
7. Stir to dissolve all the ingredients (manually or with magnetic stirrer).
8. Once dissolved, if magnetic stirrer is being used, remove the magnet.
9. Transfer procaine solution to an accurate measuring vessel (eg. graduated cylinder or volumetric flask). Top-up to the final volume with sterile water or saline, according to the formula being used.
10. Pour contents back into bottle for final stirring. Solution is now ready to sterilize.

## Procaine 20mg/ml

### Prepared with 0.9% Saline and 8.4% Sodium Bicarbonate

Final Volume (ml)	Procaine USP (mg)	Bicarb 8.4% (ml)	Makeup Approx. N Sterile water
10	200	0.3	1
50	1000	1.5	5
100	2000	3.0	10
250	5000	7.5	25
500	10000	15.0	50

## Procaine 20mg/ml

### Prepared with 0.9% Saline and Sodium Bicarbonate Powder

Final Volume (ml)	Procaine USP (mg)	Sodium Bicarb (mg)	Makeup N Sterile water
10	200	24	1
50	1000	120	5
100	2000	240	10
250	5000	600	25
500	10000	1200	50

## Procaine 20mg/ml

### Prepared with Sterile Water, NaCl Powder and 8.4% Bicarbonate

Final Volume (ml)	Procaine USP (mg)	Bicarb 8.4% (ml)	NaCl USP (mg)	Makeup N Sterile water
10	200	0.3	10	1
50	1000	1.5	50	5
100	2000	3.0	100	10
250	5000	7.5	250	25
500	10000	15.0	500	50

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## Procaine 20mg/ml

Prepared with Sterile Water, NaCl Powder and Bupivacaine Powder

Final Volume (ml)	Procaine HCl (mg)	Sodium Chloride (mg)	NaCl USP (mg)	Bupivacaine (mg/ml)
10	200	24	1	1
50	1000	120	5	5
100	2000	240	10	10
250	5000	600	25	25
500	10000	1200	50	50

\* See appendix A for supporting research

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## APPENDIX A

Research supporting extension of procaine-expiry-date to 10 years or beyond:

1. Journal of Pharmaceutical and Biomedical Analysis, Volume 18, 30 February 1998, Pages 149-154
2. Mayo Clinic Proc., November 2002, 11 (1491-1494)
3. Journal of Pharmaceutical Sciences, Vol. 88, No 7, July 1999

Conclusions:

- Procaine solution stored at ambient temperatures for 10 years maintains 79% potency.
- Procaine with Procaine shelf-life can be extended by 10 months beyond the published expiry