Review of Carbonic Maceration and Nouveau-style Wines

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It's Beaujolais Nouveau Time!
Black Grape Berry

**Anthocyanins** (red color)
- 100% skins
- 0% seeds
- 0% juice

**Tannins** (astringency, bitterness)
- 50% skins
- 45% seeds
- 5% juice

**Phenolics** (anthocyanins, tannins)
- Total in *berry* ≈ 5000 mg/kg
- Total in *wine* ≈ 2000 mg/L
Extraction of Anthocyanins

Anthocyanins [mg/L]

Riberau-Gayon
Extraction of Tannins

Time [days]

Tannins [mg/L]

Riberau-Gayon
Extraction and Temperature

![Graph showing the relationship between contact time, temperature, and percent extractable phenols.]

- The graph displays the percentage of extractable phenols over contact time at different temperatures: 86°F, 68°F, and 52°F.
- The x-axis represents contact time in hours, ranging from 0 to 500.
- The y-axis represents the percentage of extractable phenols, ranging from 0 to 100.
- Each temperature has a distinct line: 86°F in red, 68°F in orange, and 52°F in gray.

The graph indicates that higher temperatures accelerate the extraction process, reaching higher percentages of extractable phenols within a shorter contact time.
Extraction and Alcohol

Contact Time [hours]

% Extractable Phenols

%vol Ethanol

Contact Time [hours]
Destemming → Crushing
Punching down the Cap
Punching down the Cap
Pumping over the Cap

- sprinkler arm
- counter weight
- nozzle
- flexible hose
- racking valve
- pump
"Extended Maceration"

Seed Extraction!
Carbonic Maceration

• Whole clusters = intact, non-destemmed berries
• Carbon dioxide (CO$_2$) = anaërobic atmosphere at 85-95°F
• Maceration/partial fermentation by grapes’ own enzymes
• Uncrushed grapes pressed after 8-10 days; yeast added
• Complete alcoholic fermentation at 60-70°F
Carbonic Maceration

Gamay
Carbonic Maceration
Carbonic Maceration

Whole clusters/berries in gas vs. whole clusters/berries to must
Semi-Carbonic Maceration

Whole clusters/berries in gas
vs. whole clusters/berries to must
Carbonic Maceration

Destemming Or Whole Berry?
Carbonic Maceration

What Gas: CO$_2$, N$_2$, Ar?
Carbonic Maceration
Pressurized Or Not?
Carbonic Maceration

It's Beaujolais Nouveau Time!

- Fruity wines (cherry, strawberry, banana, cinnamon)
- Distinct aroma ??
- Lost varietal character ??
- Reduced acidity, more alcohol (+2%) ??
- Low in tannins, no oak ?? => fast sale
- Little aging potential or not ??
Carbonic Maceration

- Space/time requirements
- Fruit loading/removal
- Heating capabilities
- Bacterial/yeast infections
- Varietal considerations

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Wine Flaw Sensory Evaluation

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