



## EFFECTIVE AND AUTOMATED PULVERIZATION OF MOUSE MUSCLE USING THE PRECELLYS EVOLUTION

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### CONTEXT

Homogeneous, small particle powders are important to obtain the highest yield of metabolites extracted from tissues for metabolomics experiments. This is especially important when tissue powder from the same tissue needs to be aliquoted and homogenized in different extraction solvents to quantitate different classes of metabolites. The purpose of this study was to explore the utility of the Precellys Evolution to efficiently provide uniform, finely ground powders from difficult to grind tissues like mouse gastrocnemius compared to common methods like cryogrinding in a mortar and pestle.

### MATERIALS

**Automated Homogenizer:** Precellys® Evolution  
**Lysing Kit:** CK28\_2mL tubes (Cat #: KT03961-1-002.2)  
**Manual Cryogrinder:** OPS Diagnostics CryoGrinder™ Porcelain/Zirconium Mortar and Pestle kit.

### PROTOCOL

**Precellys Evolution Pulverization:** Several lyophilized mouse gastrocnemius (20 mg each) were finely powdered using CK28\_2mL tubes for 3 cycles of 20 s each at 7200 rpm with a delay time of 15 s between each cycle.

**Manual Cryogrinding:** Several lyophilized mouse gastrocnemius were pulverized manually by grinding the tissue in a porcelain/zirconium mortar immersed in liquid nitrogen using a porcelain/zirconium ceramic pestle driven by an electric screwdriver.

### RESULTS

Different tissue particle sizes are obtained from manual cryogrinding compared to Precellys Evolution pulverization of lyophilized mouse gastrocnemius.



Figure 1. Manual cryogrinding of lyophilized mouse gastrocnemius produces a large, particle powder.



Figure 2. Precellys Evolution pulverization of mouse gastrocnemius produces a fine particle powder.

Technique	Tissue Pulverization (min.)
Manual Cryogrinding	10 min. for 1 sample
Precellys Evolution	1.75 min. for 24 samples

### CUSTOMER

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### CONCLUSION

Pulverization of hard tissues like mouse gastrocnemius using manual cryogrinding is laborious and produces an unacceptable heterogenous, large particle powder for metabolomics experiments. The automated pulverization of mouse gastrocnemius using the Precellys Evolution is superior to manual cryogrinding by producing a homogenous, fine particle powder for multiple samples in a fraction of the time required to manually cryogrind tissues.

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