CLEANING EFFECT OF LAUNDRY DETERGENT ON UNIFORMS

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Background

Why did we start this research?

My friends on the baseball team were wondering if there was a detergent that could remove mud stains better, so I became interested in detergents and wanted to find out which detergents were best at removing mud.

Research

Purpose

By control experiment, I compared which detergent removes mud better.

Reagent

Wide Haiter, OxiClean, Attack, Utamaro Soap, Ariel, Water

Method

① Put mud on the cloth by twist.
　（The area of cloth is 10cm ×10cm.）
② Pour 2L of water at 30℃, 45℃, and 60℃ into each bucket.
③ Add detergent.
④ Place the soiled cloth in a bucket and soak for 30 minutes.
⑤ Remove the cloth from the bucket.
⑥ Measure the temperature and pH of the solution.
⑦ Dry the cloth.
※To get average results, the experiment is repeated multiple times. This result comes from two experiment.

Result

	Water	Ariel	Utamaro	Attack	OxiClean	Wide Haiter
30℃						
45℃						
60℃						
30℃						
45℃						
60℃						

Considering

・I can see three detergents: Ariel, Attack, and Wide Haiter; have poor cleaning power .
← it's because these three detergents are not suitable for soaking and washing.
・Utamaro has the strongest cleaning power.
← it's because It is easily soluble in water.

Future Outlook

This time, we applied mud by twisting the fabric. However, this method led to inconsistent mud adherence across different fabric samples, which made it difficult to accurately compare the mud residue before and after the soaking period. Therefore, we plan to devise a standardized method of application that allows for precise and accurate comparisons. Also, there was a discrepancy in how much mud came off between the first and second runs, so I felt there would be some possibility for improvement.

Furthermore, since the toxicity of detergents is a relevant environmental concern, our research will also take into account the safety and non-toxicity of the cleaning agents used.

https://www.pref.niigata.lg.jp/uploaded/attachment/347087.pdfWashing uniforms　（accessed April 24, 2025）