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Objective:
The purpose of this document is to describe the testing procedures and results for the qualitative testing of steroidal hormones Estradiol Enanthate and Testosterone Enanthate using the DanceSafe Testing Kit (https://dancesafe.org). DanceSafe sells a complete set of nine (9) testing reagents for $119.00 at time of writing (Feb. 2025). DanceSafe also sells a more compact reagent testing kit at $89 for six tests (Marquis, Simon, Morris, Froede, Erlich, and Liebermann), as well as each reagent individually for $20. It is important to note that while individual reagent tests can be informative, they are not conclusive. It is therefore highly recommended that at least three separate reagent tests be used (exact tests detailed later in this document under "Minimal Tests for "Conclusive" Results"). It should also be noted that each of these reagents can be produced with simple mixing, however, this may require (depending on the reagent being made) the handling of strong acids, bases, and toxic heavy metal compounds that can be difficult to acquire. For the at-home DIY tester, DanceSafe provides much more convenient access to testing for someone without knowledge of chemistry and the equipment to safely handle larger quantities of potentially dangerous chemicals. For the purposes of this document, the kit of nine reagents was ordered. It was received in good condition with each test properly and clearly labeled in a ready-to-use format.

Testing results (with pictures) for both EEn and TEn can be found at the end of this document (along with "neutral steroid" and dietary supplement dehydroepiandrosterone/DHEA). A protocol for how these specific tests were performed can also be found under the relevant results section for both compounds.

Important Note: Results presented in this document ONLY APPLY to the powdered form of Estradiol Enanthate (EEn) and Testosterone Enanthate (TEn). Results for the compounded forms of these compounds (i.e. liquid/injectable forms as well as topical creams and/or patches) could be tainted by other compounds used in the compounding process and therefore could not be compared to results presented in this document. Additionally, results for other forms of estradiol and testosterone (i.e. cypionate) were not tested for the purposes of writing this document. While results for these other forms of estradiol and testosterone should be at least comparable to those tested for this document, they may not be identical.

What is Reagent Testing?

From the start, it is important to note that reagent testing is *Qualitative* and not *Quantitative*. A *Qualitative* test will help you identify the unknown sample. A *Quantitative* test will help determine how much of what you're testing for is in a given sample. Therefore, qualitative testing relies on the assumption that you're working with a relatively pure sample rather than a mixture of several compounds.

In general, a reagent test starts by placing a small amount of sample powder on a clean, dry surface. The reagent solution is then added to the powder and mixed. The person performing the test then looks for a color change. Some reagent test results are more binary, meaning a color change is a "positive" results and no color change would be "negative". Other reagent tests operate more on a spectrum, meaning the person performing the test has to look out for specific color changes and relative intensities in color. For each reagent, the color change will typically occur near instantaneously or within several minutes. Results are typically not recorded after 10 minutes because some reagents will begin reacting with water in the air or, in the case of two-component reagent tests, may begin degrading or reacting with each other. Letting a reagent test mix for too long ultimately increases the risk of a false positive test result.

Example Scenario: 10 grams of Estradiol Enanthate was ordered. Upon receiving the sample, 10.104 grams of a homogeneous white powder is found in a sealed container in the package. The powder has a uniform white appearance without traces of other colors and all particle sizes are fairly similar. This sample would be a good candidate for reagent testing. Why?

1. The package was received in good condition without obvious signs of tampering or mishandling. The sample was also in a sealed container without obvious signs of tampering or mishandling. Ideally, the sample would also be properly labeled with the compound name and a lot or batch number to enable production traceability, although this may not be the case if the sample is being shipped to a fascist dystopia.
2. The amount received was very close to the amount ordered. It is a good practice to measure the mass of the sample received and make sure it aligns with what was ordered. If you order 10 grams of something and receive 25 grams, the vendor may have mixed up the items on their end and sent the wrong thing.
3. The sample received is a white, homogeneous powder. Descriptions of various compounds in their bulk form are typically found on a product description page. While not super descriptive, it's important to make sure these descriptions match what you receive. Color matching is important because a powder with the wrong color can mean you received the wrong sample, your sample is contaminated, your sample has degraded, or some combination therein. It is likewise important to determine if your sample is homogeneous or not (i.e. heterogeneous). A homogeneous sample will have the same appearance and consistency throughout in terms of color, texture, and particle size. A heterogeneous sample may take several forms, so here are examples:

-A mostly white powder with small specs of another, darker color (black, brown, or dark orange are common examples).

-A mostly white, fluffy powder with larger white, flat "chunks" that appear crystalline. This may be a poorly processed sample and the larger pieces may have been missed during the grinding and milling process, but it can also be a sign of a contaminant from a manufacturing process.

How Does Reagent Testing Work Chemically?

There are three components that come together to make reagent testing work: (1) the chemical structure of the sample, (2) the reactive compound in the reagent testing solution, and (3) the solvent used in the reagent testing solution. Simply put, reagent testing works by reacting the reactive compound in the testing solution with a specific part of the sample compound molecule, all of which takes place within the reagent testing solution. Each chemical structure has certain points or "groups" that are more reactive than other parts of the molecule. These are called "Functional Groups" and can be commonly identified (on organic molecules) as any grouping of elements that are not carbon (although carbon is in certain functional groups). The orientation of these atoms in 3D space dictates if a given functional group will react with a given reagent or not. Please refer to [FIG X] for a breakdown of the functional groups on both EEn and TEn.

Reagent tests are selective for specific functional groups based on that group's reactivity. The solution used in a given reagent test kit will optimize this reaction through one of several means. Some are strong acids which will add a hydrogen to certain functional groups and prime them for a subsequent reaction with the testing reagent. Other solutions may be strongly basic so that they remove a hydrogen from the sample compound so it reacts with the testing reagent. In all cases though, the active component in a reagent test will react with a specific functional group on the sample compound. This reaction changes how the resulting reagent-sample combined compound absorbs visible light and will likewise change the color of the test solution.

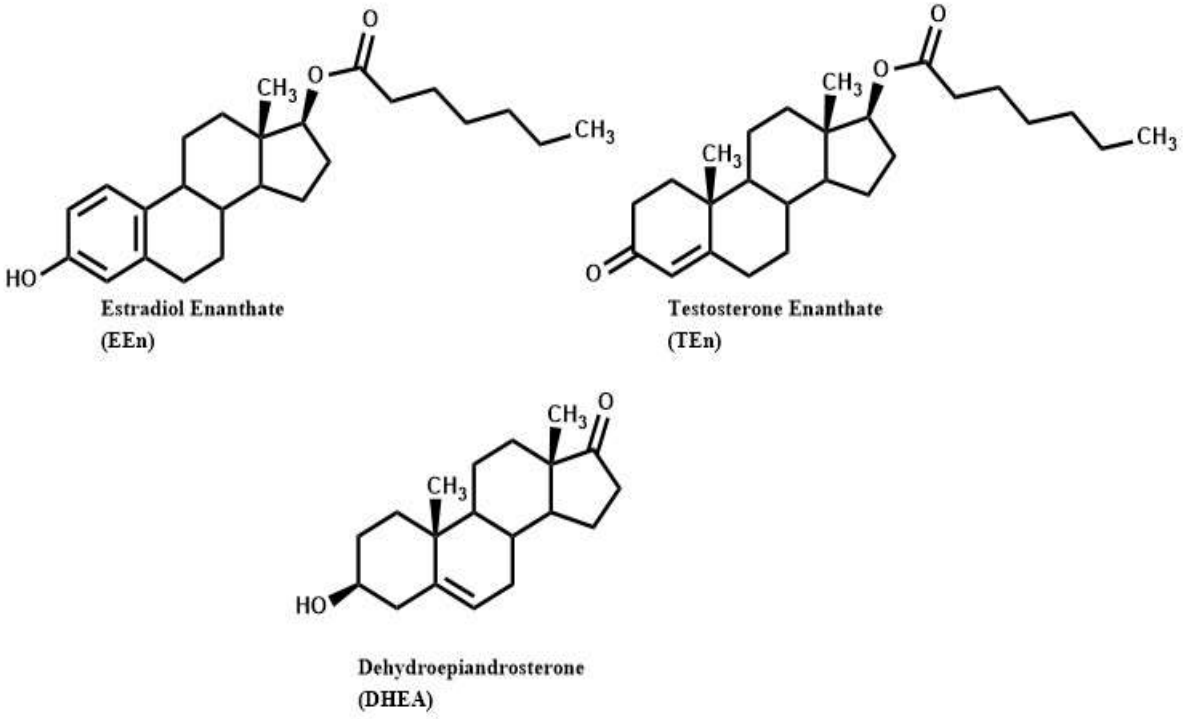


Figure 1: Chemical Structures of Estradiol Enanthate (EEn), Testosterone Enanthate (TEn), and Dehydroepiandrosterone (DHEA)

What are the Limits of Reagent Testing?
As previously discussed, reagent testing is qualitative and not quantitative. Because of this limitation, the purity of a sample cannot be determined with reagent testing alone. If a supplier includes 10% lactose (or any inactive compound) to make their supply go further, a reagent test will still test positive. The reagent test will react with a specific functional group regardless if that group is on the sample compound or another contaminant compound and is therefore incapable of distinguishing between the sample compound and a contaminant compound that happens to have the same functional group.

Because of these limitations, it is important to use reagents that will yield both positive and negative results with a given sample compound. If a sample tested with a reagent that should have resulted in no color change (or a negative result) instead yields a positive results, this indicates that a contaminant may be present and the sample should be tested further before being used (using quantitative analytical chemistry methods not discussed in this document).

Ultimately, reagent testing should be used with other validation methods to decide if a given sample is safe to use. Using multiple reagents to demonstrate both positive and negative results that align with a given sample's chemical structure is the ideal scenario. Combining these data with other experimental data (such as melting point), and doing background research on the supplier providing the sample will all contribute to the constellation that is sample safety. Suppliers should also provide (upon request) a "Certificate of Analysis" (CoA) that will show the results of the tests they performed on the sample.

Minimal Tests for "Conclusive" Results
As discussed in the previous section, reagent testing is not "conclusive" as an industrial/chemical standard, however, without access to better testing environments and/or equipment, it can still provide useful information about an unknown sample. Additionally, more tests are always better, so only limit you reagent testing to three tests if additional tests are unobtainable or prohibitively expensive.

Unfortunately, reagent testing for EEn and TEn is not very common and therefore results are difficult to obtain. Results for all nine reagent tests can be found at the end of this report and are specific to the powdered enanthate forms of both estradiol and testosterone.

For the purposes of EEn and TEn, the three bests tests to use are:

<u>Ehrlich, Froehde, and Liebermann</u>

<u>Ehrlich</u>: This test is negative for all three samples tested (EEn, TEn, and DHEA). Ehrlich reagent testing is typically used to test for compounds containing the indole functional group (such DMT and LSD). If a positive results is obtained (typically the solution will turn various shades of purple), it's possible the sample is contaminated with a psychoactive substance, something containing tryptophan, or another molecule containing an indole.

<u>Froehde</u>: This is a general purpose testing reagent and provides a range of color results for various categories of compounds. In the case of EEn, TEn, and DHEA, this reagent provided slightly different color results for each compound (as seen in the results section at the end of this report). If the test solution does not match that presented in the results section of this report (or other results specific to EEn, TEn and DHEA), contaminants may be present or the sample may not contain the desired compound.

Liebermann: This reagent is another general purpose testing reagent that will provide a range of color results for various classes of compounds. The classes of compounds covered are also different than those covered by Froehde reagent testing, so this test combined with Froehde will cover a wide range of potential compounds while also providing unique results for each compound tested in this report.

How to Perform Reagent Tests:
Reagent testing is very simple and easy to perform, however, there are several important factors to keep in mind. This section will begin with a basic explanation of how to perform these tests followed by a more detailed explanation of why it's important not to skip any steps.

TL;DR:
1. Place a small amount of dry powder material (about 1 mg) on a clean dry surface (glass or ceramic are best).
2. Add the specified number of drops of the test reagent to the powder. Then, if it's a two-component test, add the specified number of drops of the second test reagent to the powder.
3. Using a toothpick (or other clean mixing tool), mix the test reagents and powder.

If a color change is going to happen, it will likely be nearly immediate and should only intensify after mixing. If no color change has occurred within the first 30 seconds of mixing, the result is likely negative. If a color change occurs after five minutes but not before, repeat the test with a clean, dry surface and clean equipment.

Detailed explanation:
1. It is important that the surface the powder is placed on does not react with the test reagents. This is why it's important to use something like glass or ceramic as they're not very reactive (compared to something like a metal baking tray). It's also important not to use paper or some other absorbent surface. EEn and TEn are not very soluble in the test reagent solution, therefore it's important to maximize the amount of solution in contact with the test material. In a pinch, wax paper would work as a test surface. DO NOT use any metal foil (aluminum foil, etc.) as they may react with the strong acids and lead to a false positive test result.

It's also important to make sure the surface is clean. Any unclean surface has the potential to lead to a false positive test result because the contaminant may react with the test reagent. To clean the surface, it's best to thoroughly clean it with dish soap and water. No exotic cleaning chemical is required (unless the surface is regularly populated with exotic chemicals, although in that case you should know how to clean that surface better than I). Finally, after making sure all the soap is washed off, thoroughly dry the surface before testing. If the surface is glass or ceramic, you can place it in an oven at 300F/150C for several hours to be completely sure (although drying with a paper towel would be fine). Just make sure whatever you're using to dry the surface is also clean. A used dish towel may introduce new contaminants to your freshly cleaned testing surface.
A final note on the testing surface: If you're unsure whether the surface will be a neutral testing surface, add the test reagents to the surface without the test powder and mix it around. If not color develops after 10 minutes, the surface will be acceptable for testing.

2. If you're using a pre-purchased test kit, there should be instructions with the kit telling you how many drops of reagent to add (usually just one or two) and in what order to add the drops (bottles will usually have an "A" and "B" label or something comparable). Depending on the test, there may be one or two reagents. For one-component tests, the color change (if it's going to happen) will likely happen very quickly after the drop hits the powder. For two-component tests, a minor color change may occur after the first component is added. Still add the second reagent and only take note of the color change after the second reagent is added. It's the second reagent that promotes the targeted reaction taking place over potential secondary reactions between the first reagent and the test material, therefore only using the first reagent would not count as a conclusive test result.

3. It may not be necessary to mix the test to induce a color change. Mixing may be necessary if the powder does not mix with the test reagent solution. Make sure to use a clean, dry implement to mix the test solution. Something narrow, such as a toothpick, is ideal because something with a larger diameter might displace much of the test solution and/or test sample. Also make sure whatever you're using to mix the solution is not made of metal or something very absorbent.

What is Dehydroepiandrosterone (DHEA) and Why was it Tested?
DHEA is presented here for several reasons:

1. It is a "neutral" steroid in the sense that it shares the same core steroidal chemical structure with both EEn and TEn, but is still chemically unique because it contains functional groups that are not present on either EEn or TEn. This is important because reagent testing relies on the variability of these functional groups to generate different results.

2. Because DHEA is a dietary supplement, it is relatively easy to obtain (especially compared to both EEn and TEn). DHEA can therefore be used to help familiarize people with reagent testing using a non-precious sample. If you're going to get DHEA for training purposes, make sure it is pure DHEA powder and not from a capsule or something with fillers included.

3. Because DHEA is a dietary supplement and is relatively easy to obtain, it could be used as an adulterant or as a substitute for either EEn or TEn by less reputable suppliers. All three are very similar white powders and would be difficult to differentiate with only visible inspection. If you suspect your powder is DHEA and not either EEn or TEn, the Marquis and Mecke tests showed unique results for DHEA (refer to results section below). All three compounds also have very different melting points as well (TEn: 37C // EEn: 134-136C // DHEA: 148C)

Procedure and Notes on EEn and TEn Reagent Testing:

Procedure:
A. A clean, dry (newly purchased) ceramic test well dish was used for testing. The dish was cleaned with dish soap and hot water, then dried in an oven at 150C for two hours. The dish was cooled to room temperature before testing.
B. Dry, newly acquired samples of test materials were used for testing. These materials are: Estradiol Enanthate (EEn), Testosterone Enanthate (TEn), and Dehydroepiandrosterone (DHEA). Each sample was a white powder and was otherwise unremarkable.

1. A small amount of powder was first placed into each of the nine wells (3x3 grid) used for testing (approximately 1.0-3.0 mg in each case).

2. Reagents were added one well at a time starting in the top left and working down each column to the bottom right well. In the case of two-component tests, both components were added before moving on to the next reagent test. For each reagent test, a clean, dry glass capillary was used to mix the test solution. Each well had its own dedicated glass capillary to avoid potential cross-contamination. Time between the beginning of each test was kept to a minimum to prevent falsely representing results in test pictures. On average, the tests took 15-30 seconds, depending on whether it was a one-component or two-component test.

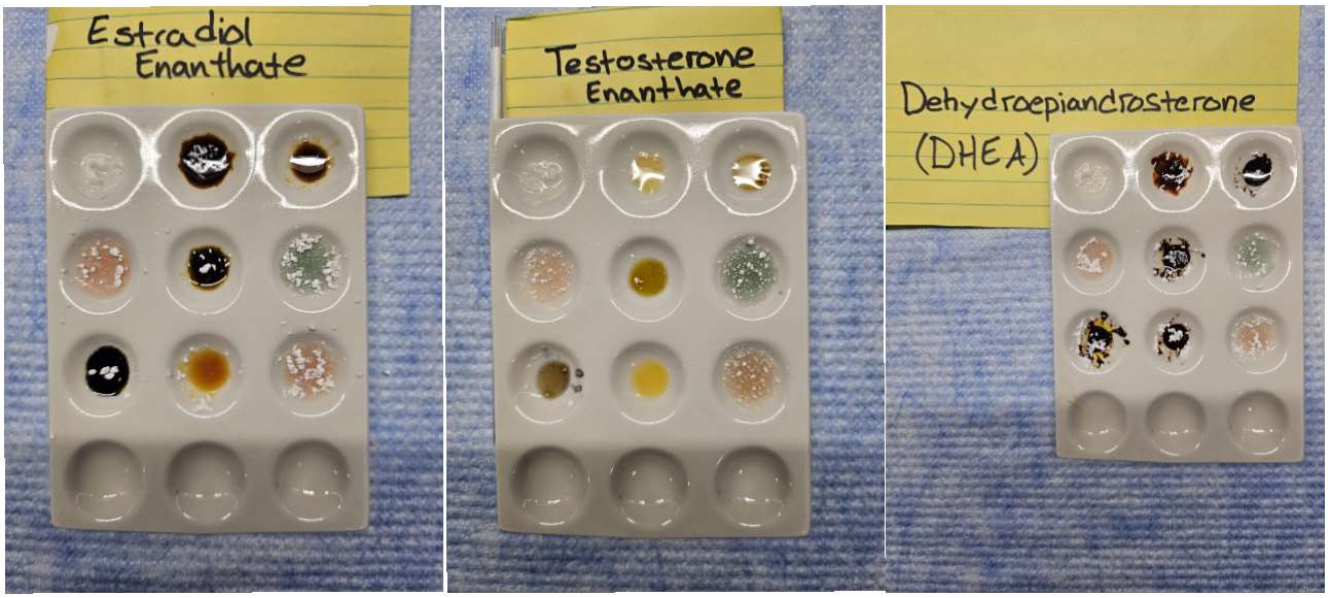
3. Picture results were recorded after each column was completed, then each minute after all test reagents were added.

Results presented in this report are from one minute after the last test reagent was added

Reagent Test Grid:

	Compound Name		
Dance Safe Reagent Testing	C1	C2	C3
R1	Ehrlich	Liebermann	Mecke
R2	Folin	Mandelin	Morris
R3	Froehde	Marquis	Simon

Grouped Test Results



	Compound Name		
Dance Safe Reagent Testing	C1	C2	C3
R1	Ehrlich	Liebermann	Mecke
R2	Folin	Mandelin	Morris
R3	Froehde	Marquis	Simon

Estradiol Enanthate (EEn) Testing Results:

Figure 2: Estradiol Enanthate (EEn) Test Plate

Compound	Reagent Test
Estradiol Enanthate (EEn)	Ehrlich

Compound	Reagent Test
Estradiol Enanthate (EEn)	Folin

Compound	Reagent Test
Estradiol Enanthate (EEn)	Froehde

Compound	Reagent Test
Estradiol Enanthate (EEn)	Liebermann

Compound	Reagent Test
Estradiol Enanthate (EEn)	Mandelin

Compound	Reagent Test
Estradiol Enanthate (EEn)	Marquis

Compound	Reagent Test
Estradiol Enanthate (EEn)	Mecke

Compound	Reagent Test
Estradiol Enanthate (EEn)	Morris

Compound	Reagent Test
Estradiol Enanthate (EEn)	Simon

Testosterone Enanthate (TEn) Testing Results:

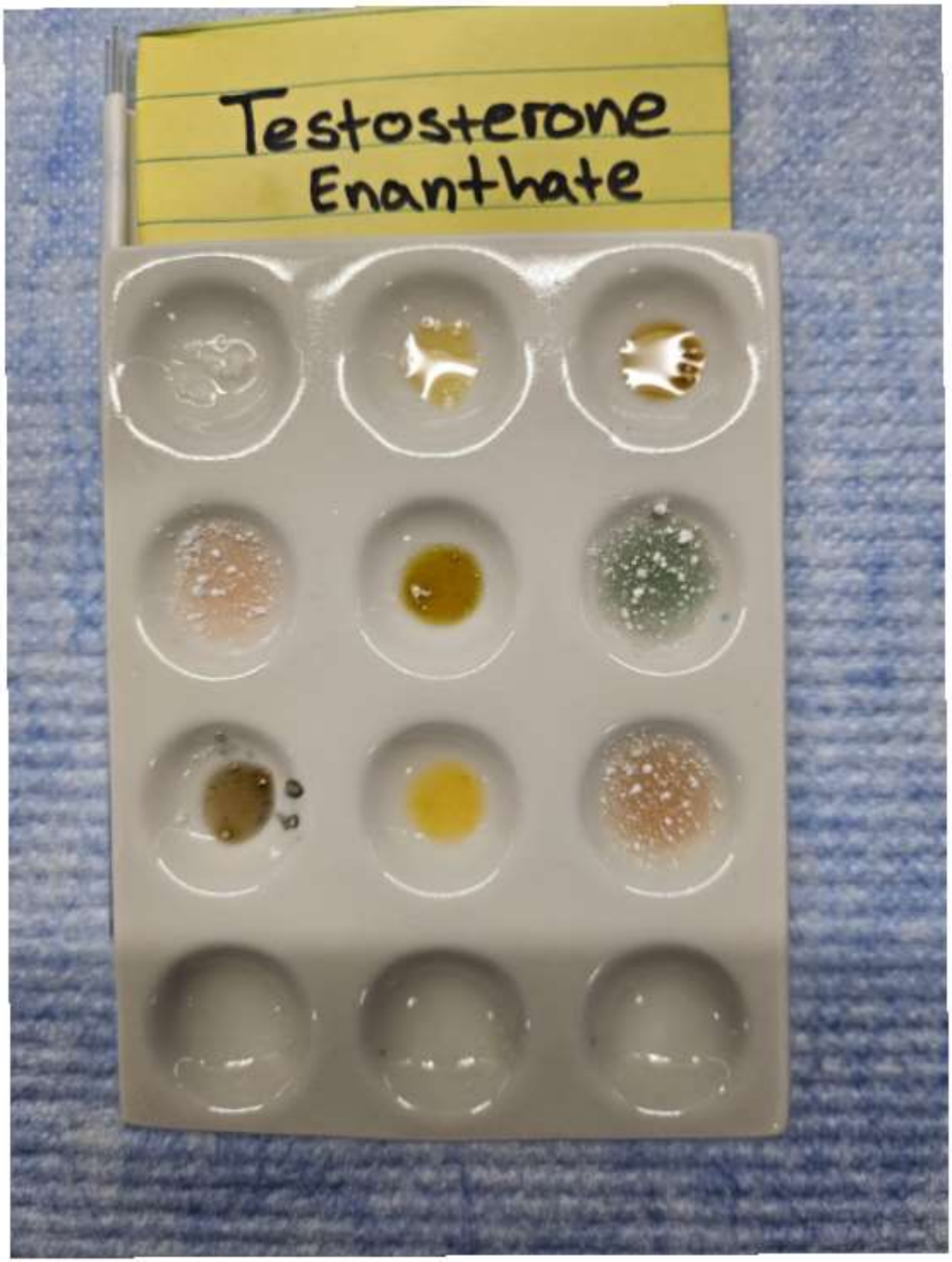


Figure 3: Testosterone Enanthate (TEn) Test Plate

Compound	Reagent Test
Testosterone Enanthate (TEn)	Ehrlich

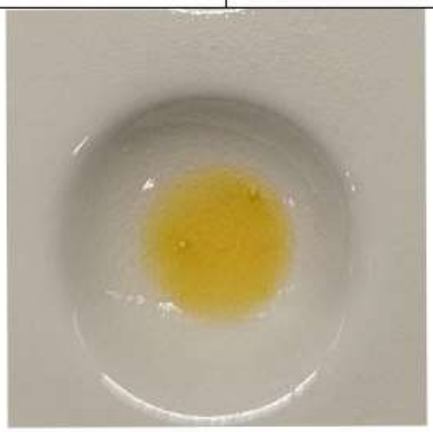
Compound	Reagent Test
Testosterone Enanthate (TEn)	Folin

Compound	Reagent Test
Testosterone Enanthate (TEn)	Froehde

Compound	Reagent Test
Testosterone Enanthate (TEn)	Liebermann

Compound	Reagent Test
Testosterone Enanthate (TEn)	Mandelin

Compound	Reagent Test
Testosterone Enanthate (TEn)	Marquis



Compound	Reagent Test
Testosterone Enanthate (TEn)	Mecke

Compound	Reagent Test
Testosterone Enanthate (TEn)	Morris

Compound	Reagent Test
Testosterone Enanthate (TEn)	Simon

Dehydroepiandrosterone (DHEA) Test Results

Figure 4: Dehydroepiandrosterone (DHEA) Test Plate

Compound	Reagent Test
Dehydroepiandrosterone (DHEA)	Ehrlich

Compound	Reagent Test
Dehydroepiandrosterone (DHEA)	Folin

Compound	Reagent Test
Dehydroepiandrosterone (DHEA)	Froehde

Compound	Reagent Test
Dehydroepiandrosterone (DHEA)	Liebermann

Compound	Reagent Test
Dehydroepiandrosterone (DHEA)	Mandelin

Compound	Reagent Test
Dehydroepiandrosterone (DHEA)	Marquis

Compound	Reagent Test
Dehydroepiandrosterone (DHEA)	Mecke

Compound	Reagent Test
Dehydroepiandrosterone (DHEA)	Morris

Compound	Reagent Test
Dehydroepiandrosterone (DHEA)	Simon