

AllergyScreen^R

Circular letter 5

Knowledge and know how in allergy diagnosis

Interference of Heparin with the AllergyScreen system

Heparin structure

Heparin is widely used as an anticoagulant and has the highest negative charge density of any known biological molecule.

Native heparin is a polysaccharide with a molecular weight ranging from 4 kDa to 40 kDa. It is a member of the glycosaminoglycan family of carbohydrates and consists of a variably-sulfated repeating disaccharide unit. The most common disaccharide unit is composed of a 2-O-sulfated iduronic acid and 6-O-sulfated, N-sulfated glucosamine.

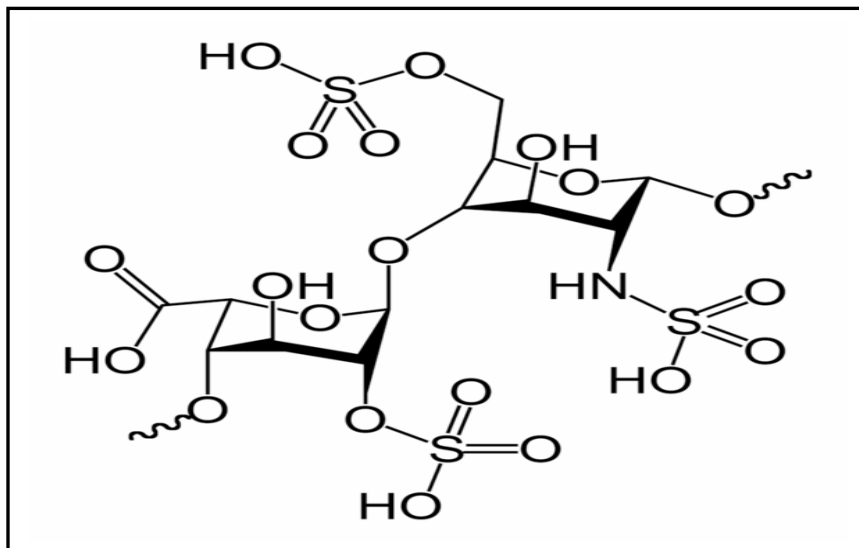


Fig.1: Repeated disaccharide unit of heparin.

According to the number of disaccharide units heparins have high negative charges. Because of the negative charge heparin can bind to different proteins.

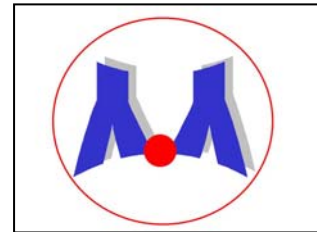
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Use of heparin in blood test tubes

Blood test tubes are covered with a color-coded plastic cap. They often include additives that are mixed with the blood when collected. The colour of the tube's plastic cap indicates which additives that tube contains. Using the wrong tube may therefore make the blood sample unuseable.

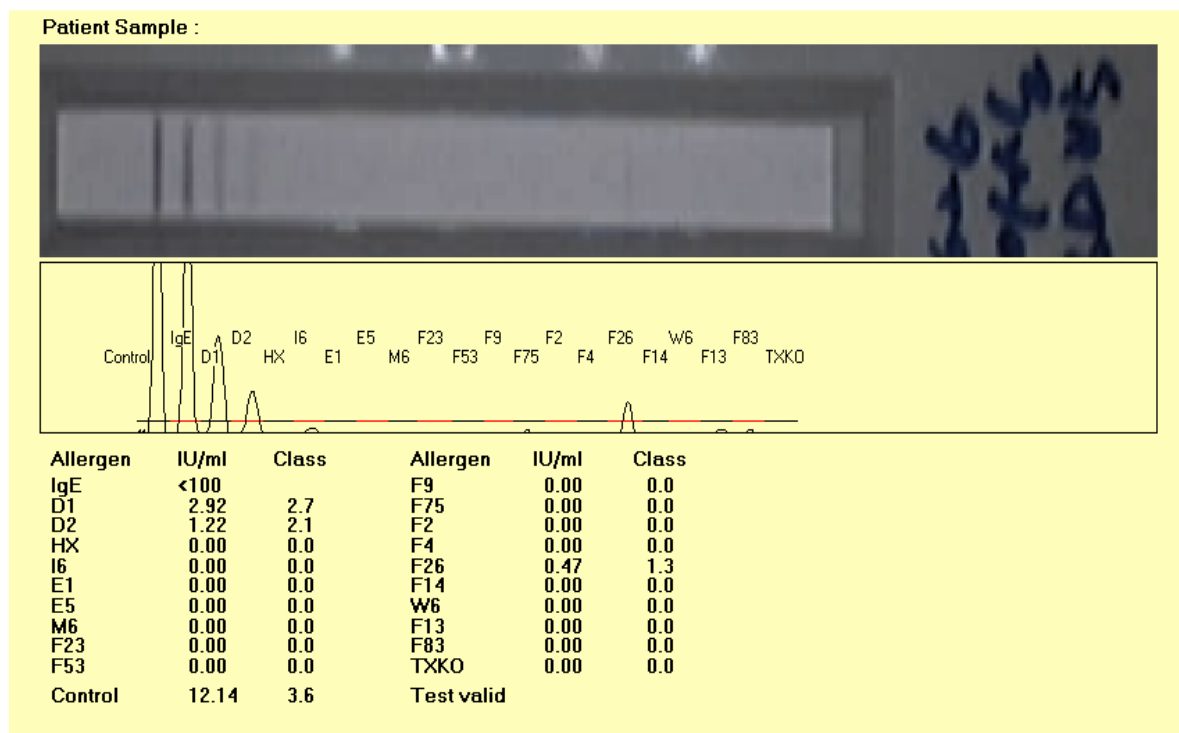
The most used additives are anticoagulants like heparin, EDTA and sodium citrate. For AllergyScreen samples **only serum test tubes** (and citrate test tubes for plasma) should be used.

Test tubes containing heparin or EDTA must be avoided. Because of the high negative charges these substances can bind to protein lines on the AllergyScreen nitrocellulose membrane, which leads to weaker signals.

The following example shows the effect of a heparin containing test tube in comparison to a correct serum test tube.

In the first picture the results of a measured AllergyScreen membrane are shown, where the serum was collected in a serum test tube.

The second picture shows the AllergyScreen results of the same patient, but with serum collected with a heparin-containing test tube.



A serum test tube was used for taking the blood sample.

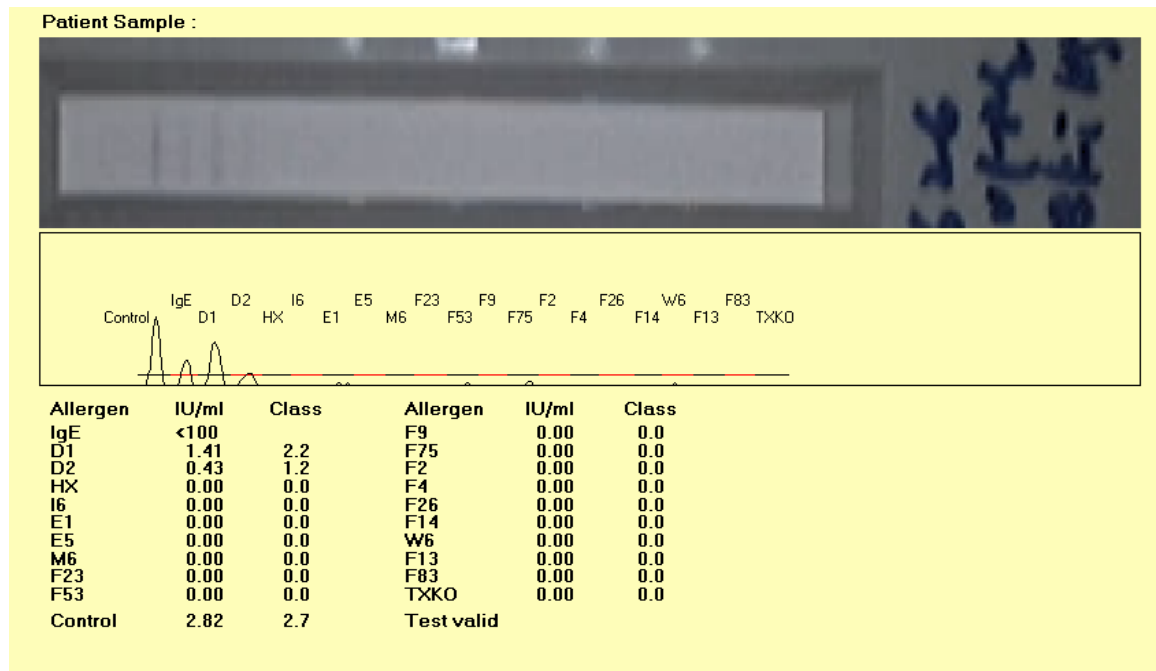
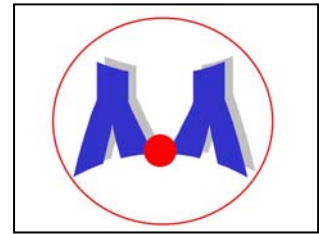
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An incorrect heparin test tube was used for the blood sample.

The signals of the control line and also for other positive allergen lines are less intensive in case of the serum sample which was collected with the heparin test tube.

So, if the control line is very weak, please check the test tube for the serum collection!

Please, never use test tubes with heparin or EDTA for taking blood samples that will be used in the AllergyScreen test system