**Conclusion**

To conclude with this report, we are confident that our second Metropolis-Hastings sampler is accurate for predicting the Emax model; firstly by making sure our parameters had no correlation by using the covariance matrix for the posterior distributions (which was our problem with the first sampler). Secondly, from the Kolmogorov-Smirnov test that by taking two samples from our Metropolis-Hastings sampler, 95% confident that they followed the same distribution.

Therefore using our second Metropolis sampler we have found that from computing the 95% Credible Interval for our biomarker, β, was significant: (6.505-16.018), so we can be clear, that not only from figure 1, that the biomarker significantly increases the tolerance level of the treatment and so clinicians may be able to administer a higher doses to patients with the biomarker.

Having considered the tolerance levels of the individuals in the phase one of the trial with and without the biomarker, it would be advisable for the clinicians to set the maximal safe dose to ED30 for future trials. This is defined as:

