Contents

This Matlab program calculates the local optimal and minimax design for a three arm clinical trial with presence of heteroscedasticity.

Usage:

Call: minimax_3arm(theta, r, V2, V3)

with:

- theta as noninferiority parameter in (0,1)
- r = [r2,r3] as real variance ratios
- V2 = [V2_L, V2_U] as estimation area for r2
- V3 = [V3_L, V3_U] as estimation area for r3

Example call in MatLab environment:

```
>> minimax_3arm(0.6, [1.61, 0.52], [0.64 4.03], [0.21 1.3])
>>
>> Calculation minimax design, please wait...
>> Calculation done
>>
>> Designs efficency plots for real variance ratio r=(1.61, 0.52) and estimation area V=[0.64, 4.03]x[0.21, 1.30]
>>   - local point optimal design: w=(0.76, 0.29)
>>   - minimax optimal design:   w^*=(0.84, 0.36) (p^*=(0.38, 0.16)) with efficiency of at least 91.938%
```

Literature:

Dette, Trampisch, Hothorn (2008), Robust Designs in Non-Inferiority Three Arm Clinical Trials with Presence of Heteroscedasticity, Statistics in Biopharmaceutical Research

Included files in this archive:

- minimax_3arm.m as the main routine
- robust.m to calculate the minimax design
- hotfun.m as the numerical function to minimize
- hotfun_list.m to list the final values at the corner points
- con_maximin.m as the constrains for the numerical optimizer

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