```
hsimp_rec_fun_lemma  THM

⊢  ∀'a:S.
   all
   (λn:hnum. all
             (λf:'a → 'a. all
                           (λx:'a. equal
                                   (exists
                                    (λfun:hnum → 'a. simp_rec_rel
                                                      (fun
                                                      ,x
                                                      ,f
                                                      ,n))
                                   ,and
                                    (equal(simp_rec_fun(x,f,n,0),x)
                                    ,all
                                     (λm:hnum. implies
                                               (lt(m,n)
                                               ,equal
                                                (simp_rec_fun
                                                 (x
                                                 ,f
                                                 ,n
                                                 ,suc(m))
                                                ,f
                                                 (simp_rec_fun
                                                  (x
                                                  ,f
                                                  ,n
                                                  ,m))))))))))
  by HOL "hsimp_rec_fun_lemma"
END
```