GS02-4 Human serum albumin as a carrier of reactive sulfur species

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Recently, hydrogen sulfide is focused on third gas transmitter like nitric oxide and carbon monoxide. Hydrogen sulfide is constantly produced by enzymes such as Cystathionine-β-synthase or Cystathionine-γ-lyase and has an anti-oxidant and anti-inflammatory effect. Previous reports showed that serum could scavenge hydrogen sulfide produced by NaHS, and that addition of reducing agents could release hydrogen sulfide from human serum. These data suggested that human serum has a hydrogen sulfide-reserve protein. We recently clarified that hydrogen sulfide or sodium polysulfide was trapped by serum, mainly by serum albumin and the serum albumin formed polysulfides (SSnH) with reacted to thiol (SH). It is well known that polysulfide compounds possesses a high reactivity and a strong anti-oxidant effect. Polysulfide added albumin (*S*-sulfhydrated human albumin) scavenged 2,2-diphenyl-1-picrylhydrazyl (DPPH) radicals in a polysulfide content-dependent manner. In summary, we revealed that serum albumin carries polysulfides and works as an anti-oxidant. In this symposium, we will also show that *S*-sulfhydrated human albumin has potential to be an attractive and effective candidate for use as a skin whitening agent.