HISTOPATHOLOGICAL DESCRIPTION OF THE LUNGS OF MICE (MUSMUSCULUS) THAT WAS GIVEN ASCORBIC ACID

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HISTOPATHOLOGICAL DESCRIPTION OF THE LUNGS OF MICE (MUSMUSCULUS) THAT WAS GIVEN ASCORBIC ACID

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ABSTRACT

Ascorbic acid or better known strengthening immunity against infection, especially during thecurrent covid 19 outbreak, the people's consumption power of ascorbic acid is extraordinary. Thelung is an elastic cone-shaped organ located in the thoracic cavity and is an organ that oftenexperiences pathological abnormalities. An imbalance of oxidants– antioxidants are mutuallyreinforcing and contribute to tissue damage. The purpose of this study was to determine theeffect of consuming low doses of ascorbic acidevery day on lung histopathology, especiallyfibrosis in mice (Mus musculus). This study was an experimental study with post-test only with acontrol design and used 15 mice as samples. Samples were divided into 5 groups consisting of onepositive control group, one negative control group and three different dose groups from theascorbic acid treatment group (0,76mg,0,51 mgdan 0,26 mg in one treatment, here is done 2timesthetreatmentinonedayfor7days).Dataanalysismatchresultstothescoretabledetermining the damage in the form fibrosis. The histological structure of the lungs mice fromeach treatment compared to the control. The damage score of each tweet then per group issummed up and averaged. Furthermore, data analysis is carried out using the One Way ANOVAtest.. In conclusion, study was conducted consumption of ascorbic acid below the dose alsoresulted in damage to the pulmonary organs and the result is the same as not consuming ascorbicacid.
Keywords:lungfibrosis,Ascorbicacid,MusMusculus.

INTRODUCTION

Consumption of ascorbic acid during a pandemic is like daily food consumption due to excessive fearof covid 19. So far, vitamin C or ascorbic acid is known for its role in maintaining and strengtheningimmunity against infection. The main forms of ascorbic acid eaten are L-ascorbic and dehydroascorbic acid.Synthetic ascorbic acid is available in a variety of supplements in various forms, both in the form of tablets,capsules,chewabletablets,crystallinepowder, andin theform of asolution.Vitamin Ciscalledanantioxidantbecauseby donatingelectronsitpreventsothersubstancesin thecompositionfrombeingoxidized, an imbalance of oxidants – antioxidants are mutually reinforcing and play a role in causing tissuedamage (Kumaretal.,2007).

Lungis an elastic,cone-shapedorgan locatedin the thoraciccavity andis an organ that oftenexperiences pathological abnormalities. In the distal respiratory system, such as the alveoli, defense againstmicrobes no longer depends on ciliated epithelium, goblet cells, and mucus but on protective cells in lungtissue, namely lymphocytes and plasma cells that produce antibodies, macrophages, and polymorphonuclearlymphocytes that produce antibodies. phagocytes (Barret et al., 2010). Severe alveolar epithelial damagecauses difficulties in the repairmechanism of the lung and leads to fibrosis. This lung injury is alsocausedbyanimbalanceofpro-inflammatoryandanti-inflammatorycytokines

METHODS

Prepared a number of 15 mice with details of 5 treatments with 3 repetitions, total 20 and we add 5to spare assuming each treatment has a reserve of 1 mouse. The mice used were mice aged 1-2 monthsbecause atthis agetheywereinaperiodofgooddevelopment.

	Mice 20g	Rat 200g	Rabbit 1,5kg	Human 70kg
Mice 20g	1,0	7,0	27,80	387,9
Rat 200g	0,14	1	3,9	56,0
Rabbit 1,5kg	0,04	0,25	1,0	14,2
Human 70kg	0,0026	0,018	0,07	1,0

Table 1.Experimental animal dose conversion

Dosagecytostaticscalculationisdonewiththeformula:

Dosage = LPT X COMMON DOSE

$$LPT = \frac{\sqrt{Height\ X\ Weight}}{3600}$$

Height Mice=17cm
Weight Mice=24gr
AscorbicAcidDosageperday

1 capsule = 50mg, recommended dose1x3(1capsuletaken3timesaday)=50x 3=150mg

$$LPT = \frac{\sqrt{17\ x24}}{3600} = 0,11\ x150 = 16,5mg$$

The usual dose of ascorbic acid consumption in mice is 16.5 mg per day. Then do the labeling of the cage.One cage contained 3 mice, namely cages coded 1, 2, 3, 4 and 5 the treatment code was P (1) Positive controltreatment: mice were given standard feed, water and given 16,5 mg Vit.C, P (2) Negative control treatment:mice were given standard feed and water, P(3) Food treatment + 0.76 mg Vit.C dissolved in 0.24 ml sterilepz, P(4) food + 0.51 mg Vit.C dissolved in 0.49 ml sterile pz, P(5) Treatment food + 0.26 mgVit. C dissolvedin 0.74 ml sterile pz,, Each treatment was given 2 times in one day, in the morning at 08.00 am and in theafternoon at 15.00 pm. To facilitate the sonde process, vitamin C is diluted using sterile distilled water to avolumeof1ml.Thestudywasconductedusingacompletelyrandomizeddesign(CRD)withthreerepetitions. Total dose of ascorbic acid given to mice every day was P1:16.5mg, P3:1.52mg, P4: 1.02mg,P5:0.52mg.

Rate of Change	Information	Scores
Normally	There is no histological structure.	0
Mild	Damage less than a third of the entire field of view	1
Moderate	Damage of one-third to two-thirds of the entire field of view	2
Severe	Damage to more than two-thirds of the entire field of view	3

Table2.Lung histopathological damage assessment score (Hansel&Barnes2004)

The treated and untreated mice were put into jars that had been given chloroform to be anesthetized beforesurgery.Aftertheoperationthecontainercontainsa10%formalinsolutionforthefixationprocess.Preparation of preparations in this study was carried out by paraffin method, Hematoxylin Eosin (H&E)staining.Theworkingstagesoftheparaffinmethodareasfollows:fixation,dehydration,clearing,infiltration, embedding,sectioning,affixing,deparaffinization,staining,mounting,andlabeling.Observations were made using a light microscope with an magnification of 400x across the entire field ofview.Theassessmentofthedegreeoflungdamageisdonequalitativelybasedonthedamagescore(Table2)bydeter miningthedamageintheformofnecrosis,congestion,bleeding,inflammatorycells,erosionof

the bronchial, thickening of the walls of the septa alveoli, narrowing, widening of alveoli, phybrin, oedemafluid, and granulomas. The histological structure of the lungs mice from each treatment compared to thecontrol. The damage score of each tweet then per group is summed up and averaged. Furthermore, dataanalysisis carriedoutusingtheOneWayANOVAtest..

RESULTS

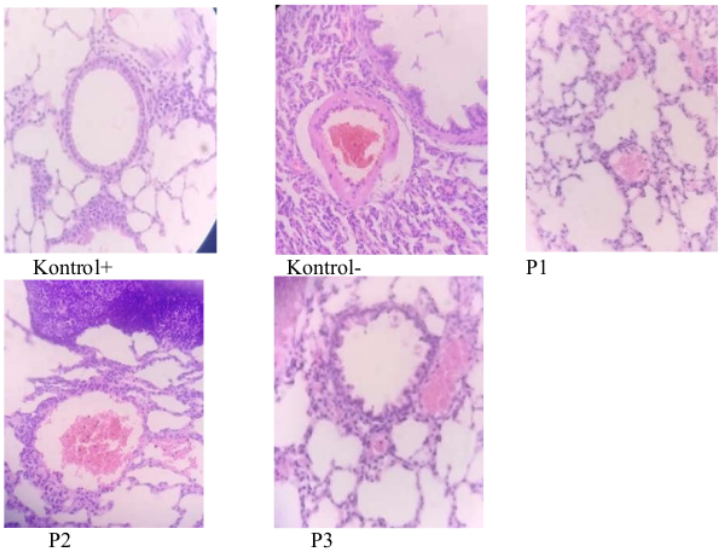


Figure1.Histopathologicalappearanceofpulmonaryfibrosisofmice(Musmusculus)afterascorbicacidprobe for7 days (HEstaining,400xobjectivemagnification).

Givingascorbicacidforbysondemethodprovides achangeinthehistopathologicalpictureofthemicelung(Mus musculus). In the control group (K+)/ P1, there has been no change in the histopathological picture ofthe lungs. The alveolaris and alveolus ducts are wrapped by finely shaped alveolus cells, in the proprialamina that circle from the edge of the alveolus there is webbing of smooth muscle cells. In the control group(K-)/P2 there was a presence of bleeding and in the treatment of P3, P4, P5 thered inflammatory cell powderand scarringandhemorrhagictissue scatteredinthelungarea.

Group Treatment	Repetition 1	Repetition 2	Repetition 3
Control +(P1)	0	0	0
Control–(P2)	1	1	0
Treatment 3:0.76	1	1	1
Treatment 4:0.51	1	1	1
Treatment 5:0,26	1	1	1
Total	4	4	3
SD	0,8	0,8	0,6

Table3.Scoring resultson5treatmentswith3repetitionsofascorbicacid

In table 3 it appears not much different between the treatment 3, 4 and 5 but when compared to positipcontrol given ascorbic acid according to the recommended dose the results are very different. In positipcontrol there is a good picture of cells in the absence of fibrosis. Pulmonary fibrosis is caused by scar tissueforminginside thelungs.There are severalfactorsthatcantriggerthe formationofscartissue.

Tests of Normality[a,c,d,e]

		Kolmogorov-Smirnov[b]			Shapiro-Wilk		
	Treatment	Statistic	df	Sig.	Statistic	df	Sig.
hasil	neg 1	.385	3	.	.750	3	.000

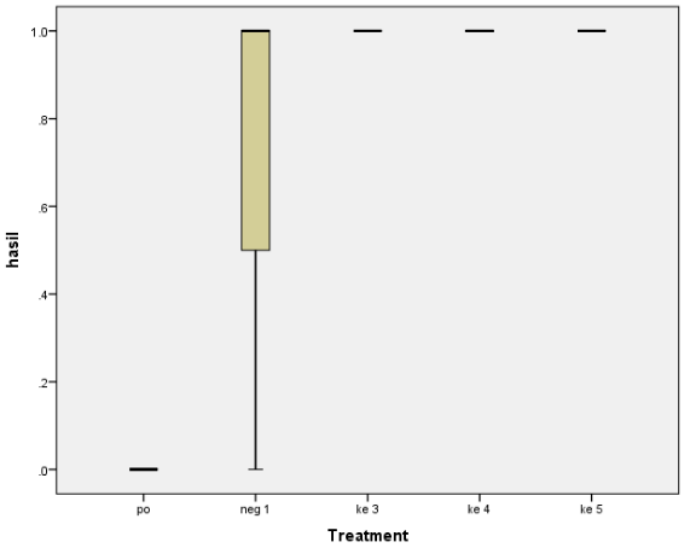
a. Result is constant when Treatment = po. It has been omitted.

b. Lilliefors Significance Correction

c. Result is constant when Treatment = ke 3. It has been omitted.

d. Result is constant when Treatment = ke 4. It has been omitted.

e. Result is constant when Treatment = ke 5. It has been omitted.



Test of Homogeneity of Variances

hasil

Levene Statistic	df1	df2	Sig.
16.000	4	10	.000

ANOVA

hasil

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.267	4	.567	8.500	.003
Within Groups	.667	10	.067		
Total	2.933	14			

DISCUSSION

The results of this study there is an influence of given ascorbic acid below the prescribed dose, in thetreatment of 1 or control positipmusmusculus given ascorbic acid as recommended in one day adjusted

tothe tamping power of the stomach, food is reduced and ascorbic acid is included according to the doseobtained results of no changes in tissues. In treatment 2 or negatip control is given food only as usual withoutany intake of ascorbic acid obtained the result of minor damage to the tissues. In the treatment of foodtreatment+0.76mgVit.Cdissolvedin0.24mlpzsterileobtainedthepresenceofminordamage,aswellasintreatment4and5founddamagewithadegreeofminordamage,P(4)food+0.51mgVit.Cdissolvedin0.49mlpzsterile,P(5)Foodtreatment+0,26mgVit.Cdissolvedin0.74mlpzsterile.Based on the results of the study showed that the consumption of vitamin C or ascorbic acid at low doses can damage the lungs, in other words there is no difference with the control or without the consumption of ascorbic acid. please note, consumption of ascorbic acid must pay attention to the rules or recommended dosages and do not arbitrarily consume outside the recommended dose because the physiological conditions shown in the treatment in mice do not show good conditions in the lungs.

CONCLUSION

Of the many cases of cytokine storms that occur due to the consumption of ascorbic acid that exceedsthe dose turned out in the pandemic when this study was conducted consumption of ascorbic acid below thedose also resulted in damage to the pulmonary organs and the result is the same as not consuming ascorbicacid. To get the maximum benefit of ascorbic acid then you must comply with the recommendations of apredetermined dose, do not make your own rules by reducing or increasing the dose of consumption withoutanyinstructionsfroma doctororpharmacist,becauseitwillcause adverseeffectson yourlungs.

It can be concluded with insignificant results should be the time the study is added

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