ABSTRAK

PENGARUH KONSUMSI TEH TERHADAP ABSORPSI FE

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Teh merupakan salah satu minuman yang paling banyak dikonsumsi. Rata-rata konsumsi teh di dunia adalah sekitar 120 ml/hari per kapita. Selain mempunyai banyak manfaat terhadap kesehatan, ternyata teh juga diketahui dapat menghambat absorpsi Fe. Tujuan karya tulis ilmiah ini adalah mengetahui efek konsumsi teh terhadap absorpsi Fe. Hasil penelitian menunjukan tanin pada teh mengandung gugus OH^- pada cincin aromatik sehingga membentuk kompleks khelat dengan besi heme dan nonheme. Ikatan yang terbentuk akan dibuang melalui feses yang mengakibatkan absorpsi zat besi tidak dapat mencukupi kebutuhan tubuh. Absorpsi zat besi yang tidak mencukupi kebutuhan tubuh dalam jangka panjang menimbulkan gangguan transferin dalam membawa besi ke eritroblas. Ketika terjadi kekurangan zat besi, sintesis heme dihentikan dan biosintesis globin dihambat melalui *heme regulated inhibitor* (HRI). Peningkatan aktivitas HRI menghambat faktor inisiasi transkripsi sintesis heme yaitu *Eukaryotic Initiation Factor 2* (eIF2). Oleh karena itu, prekursor sel darah akan mengandung lebih sedikit heme dan rantai globin sehingga menurunkan konsentrasi hemoglobin darah dan menimbulkan anemia.

Kata kunci: absorpsi Fe, anemia defisiensi Fe, teh, tanin, hemoglobin

ABSTRACT

THE EFFECT OF TEA CONSUMPTION ON FE ABSORPTION

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Tea is one of the most consumed beverages. The average consumption of tea in the world is about 120 ml/day per capita. In addition to having many health benefits, it turns out that tea is also known to inhibit Fe absorption. The purpose of this scientific paper is to determine the effect of tea consumption on Fe absorption. The results showed that the tannins in tea contain the OH- group on the aromatic ring so as to form a chelating complex with heme and nonheme iron. The bonds formed will be excreted through the feces which results in the absorption of iron being unable to meet the body's needs. Absorption of iron that is not sufficient for the body's needs in the long term causes transferrin interference in carrying iron to erythroblasts. When iron deficiency occurs, heme synthesis is stopped and globin biosynthesis is inhibited via heme regulated inhibitors (HRIs). Increased activity of HRI inhibits the transcriptional initiation factor of heme synthesis, namely Eukaryotic Initiation Factor 2 (eIF2). Therefore, the blood cell precursors will contain less heme and globin chains thereby lowering the blood hemoglobin concentration and causing anemia.

***Keywords**: Fe absorption, Fe deficiency anemia, tea, tannin, hemoglobin*

DAFTAR ISI

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DAFTAR GAMBAR

DAFTAR SINGKATAN

Hb	Hemoglobin
Ht	Hematokrit
WHO	*World Health Organization*
Riskesdas	Riset Kesehatan Dasar
Suksinil-KoA	Suksinil-Koenzim A
ALAS2	*δ-Aminolevulinic 2*
ALA	Asam δ-Aminolevulinic
CPgenIII	*Coproporphyrinogen III*
PPIX	*Protoporphyrin IX*
FECH	*Ferrochelatase*
Dcytb	*Duodenal Cytochrome B*
DMTl	*Divalent Metal Transporter 1*
NSAID	*Nonsteroidal Anti-Inflammatory Drugs*
H2 blocker	*Histamine 2 blocker*
IRIDA	*Iron Refractory Iron Deficiency Anemia*
IRPs	*Iron Regulator Proteins*
IRE	*Iron Responsive Element*
FPN	*Ferroportin*
BMP-SMAD	*Bone Morphogenic Protein-Small Mothers Against Decapentaplegic*
HJV	*Hemojuvelin*
TMPRSS6	*Transmembrane Serine Protease 6*
TFR2	*Transferrin Receptors 2*
HDAC3	*Histone Deacetylase*
HIF2a	*Hypoxia-Inducible Factor 2 alpha*
EPO	Eritropoetin

ERFE	*Eritroid Erythroferrone*
MCV	*Mean Corpuscular Volume*
TIBC	*Total Iron-Binding Capacity*
FEP	*Free Erythrocyte Protoporphyrin*
MCH	*Mean Corpuscular Hemoglobin*
MCHC	*Mean Corpuscular Hemoglobin Concentration*
SADT	Sediaan Apus Darah Tepi
DNA	*Deoxyribonucleic Acid*
RLS	*Restless Legs Syndrome*
CRP	*C-Reactive Protein*
LED	Laju Endap Darah
sTfR	*Soluble Transferrin Receptor*
EP	*Erythrocyte Protoporphyrin*
CDC	*Centers for Disease Control and Prevention*
RHC	*Reticulocyte Hemoglobin Content*
RDW	*Red Cell Distribution Width*
PRC	*Packed Red Cell*
RAS	*Restless Arms Syndrome*
BBLR	Berat Bayi Lahir Rendah
TFs	*Theaflavin*
PO	Peroksidase
AOAC	Association of Official Agricultural Chemists
EGCG	*Epigallocatechin-3-gallate*
ECG	*Epicatechin-3-gallate*
EGC	*Epigallocatechin*
EC	*Epicatechin*
ROS	*Reactive Oxygen Species*
GSH	*Glutathione Reductase*
NF-kB	*Nuclear Factor-kappa B*

TNF-a	*Tumor Necrosis Factor-alpha*
IL-1B	Interleukin-1B
COX-2	*Cyclooxygenase-2*
MMP-9	*Matrix Metalloproteinase-9*
cAMP	*Cyclic Adenosine 3,5-Monophosphate*
PKA	Protein Kinase A
IL-2	Interleukin-2
IFN-c	*Interferon*-C
Th1	*T Helper*-1
IL-4	Interleukin-4
IL-5	Interleukin-5
Th2	*T Helper*-2
SIRT3	Sirtuin 3
SOD2	Superoksida Dismutase 2
GPX1	*Glutathione Peroxidase*
Cdk4	*Cyclin-Dependent Kinase 4*
VEGF	*Vascular Endothelial Growth Factor*
MMP-2	*Matrix Metalloproteinase-2*
BAX	*BCL2 Associated X*
BAD	*BCL2 Associated Agonist*
p53	*protein* 53
Bcl-2	*B-cell lymphoma 2*
Bcl-xL33	*B-cell lymphoma-extra large-33*
UCP-1	*Uncoupler Protein 1*
PGC-1a	*Proliferator-Activated Receptor-Gamma Coactivator-1a*
PI3K	*Phosphatidylinositol 3-Kinase*
AMP	*Adenosine Monophosphate*
SOD	Superoksida Dismutase
AChE	Asetilkolinesterase

FOXO1	*Forkhead Box Protein O 1*
CsgD	*Curli subunit gene D*
TMV	*Tobacco Mosaik Virus*
RNA	*Ribonucleic Acid*
HIV	*Human Immunodeficiency Virus*
HIV-1	*Human Immunodeficiency Virus-1*
TfR1	*Transferrin Receptor 1*
sTfR1	*Soluble Transferrin Receptor 1*
HRI	*Heme Regulated Inhibitor*
eIF2	*Eukaryotic Initiation Factor 2*