



# Review On In Vivo Anti-Inflammatory Activity Of Anthocynine From A Fruit Of Chrysobalanus Icoca Linn

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## Abstract

The genus chrysobalanus is one of the class of medicinal plant, used to treat and cure various disease in orthodox medicinal system, also with nutritional uses, with long establish uses in various medicine systems. It is a low shrub or bushy tree, found as non-indigenous species, it is evergreen plant (10). There are few secondary metabolite isolated from fruit, leaves, stem, root, seed, of chrysobalanus icoca linn (C.I.L.) (4), studies focus on phenolic, Anthocynine, alkaloids, and terpenoids (4) and these secondary metabolites used in diseases like inflammation, glycemia, obesity, cancer etc. To understand anti-inflammatory activity of c.i.l. however, fruit and stem bark contain Anthocynine which show anti-inflammatory action (1). (dose: aqueous/200, 400mg/kg) (4).

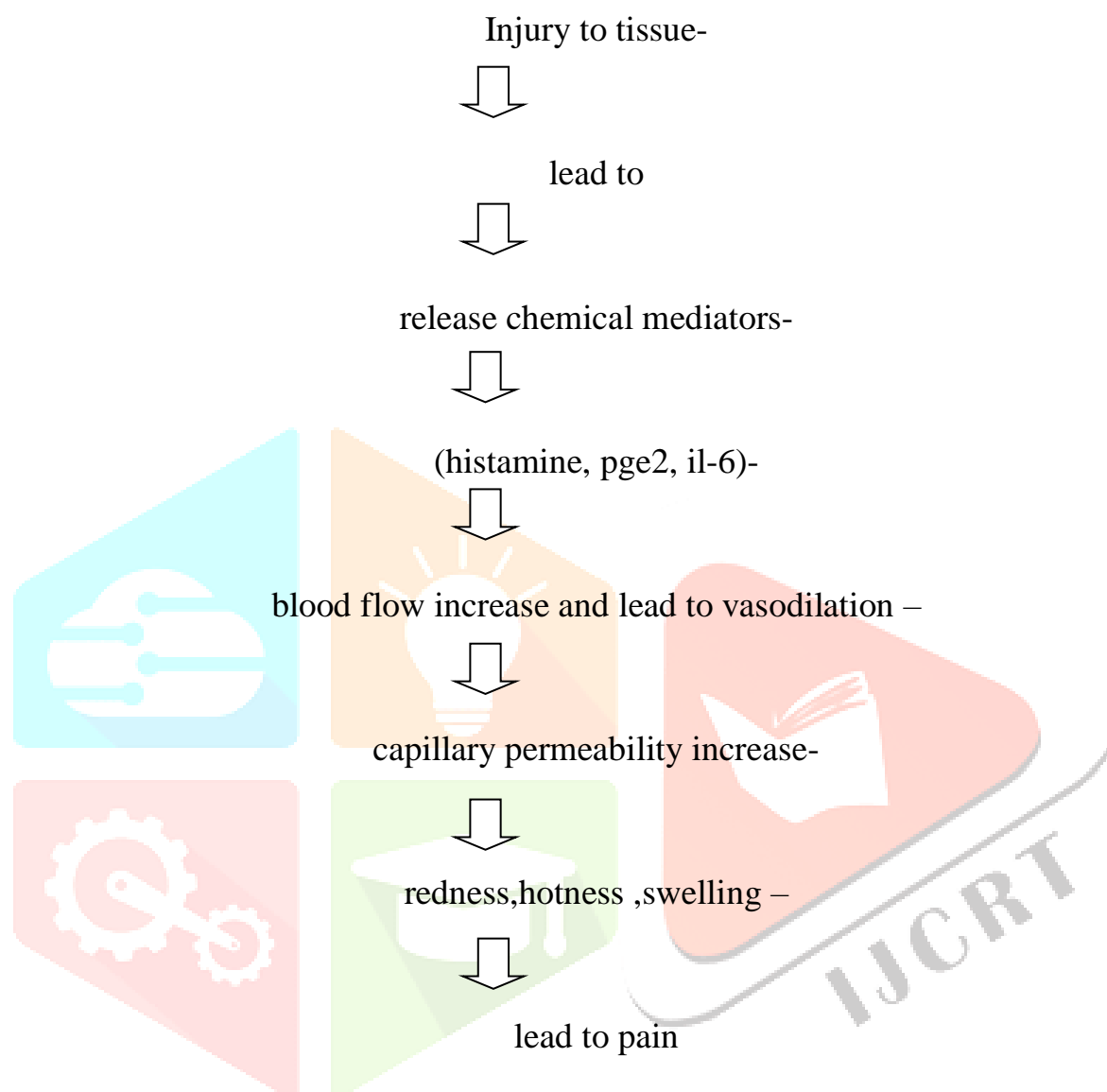
## Introduction :

Chrysobalanus icoca linn (C.I.L.), is a plant of family chrysobalanaceae (3), mostly found in Brazil, West Africa, South America (10). The c.i.l. used in various diseases, therapeutic activity, with less adverse effect. C.i.l. also known as Abajeru (3). The chrysobalanaceae family consist of 17 genera and about 525 species of shrub (2). The different use of plant are – medicinal, nutritional, food. Parts of plants used have medicinal uses are stem, bark, leaves, roots, fruit and etc. These parts used to treat or cure or nutritional value in diseases like Diabetes, Low glucose level (7,8), looseness in bowel, chrons and inflammatory bowel disease (5). Inflammation (hotness, burning, redness) (1), Autoimmune disease like rheumatoid arthritis (1), plumpness (4), Malignancy (9), Hemorrhage, Fluor albus (11), HIV inhibitory function (6) and also used as a Antioxidants (4).

An inflammation is a response to an injury, infection, metabolic changes or dysfunction, allergic reaction, autoimmune diseases etc. after an inflammation homeostasis occurs (1). Homeostasis is essential for restoration of cell (1).

However there are several side effect of current pharmacological treatment of drug on patient lifestyle , like it affect kidney ,liver function ,chances of development of cancer (4) . Thus we review the effect on anti inflammatory activity of c.i.l. .

### Inflammation flow chart:



### Methodology :

The search for review start in octomber 2022 by using scintific name chrysobalanus icoca linn .The slection of data on Google , scholer.com, science direct, Wikipedia , web of science , ncbi. The study are slected where chemical aspect invivo or invitro evaluation of pharmacological activity of anti inflammatory action of secondary metabolite Anthocyanine which obtained from fruit and steam bark .

#### 1.Relationship of inflmmation with metabolic syndrome (Obesity) :

Obesity considerd as inflammatory state .the concept of proinflmmatory state is component of metabolic syndrome because of reactive protein associated with metabolic syndrome risk factor .that is , increase size of adiponectine and resistine which produce IL6, IL8, TNFAlpha .(4)

## 2.relationship of inflammation with Diarrhea :-

It is the group of disease that is inflammation , pain, swelling in large and small intestine . IBD include crohns disease and ulcerative colitis lead to diarrhoea.(5)

## 3. relationship with rheumatoid arthritis (R.A)

It is autoimmune disease in which attack on soft tissue cause inflammation (redness ,swelling , heat) there is pain full condition of patient .(3)

Phytochemicals present in fruit of c.i.l

Chart:

Part of C.I.L	Chemical class and constituents	References
Fruits	<p><b><u>Anthocyanins:-</u></b></p> <p>S Delphinidin-3-glucoside, Cyanidin 3-glucoside, Petunidin 3-glucoside, Peonidin 3-glucoside, Delphinidin 3-(6"-oxaloyl) arabinoside, Delphinidin 3-(6-acetyl) galactoside, Petunidin 3-(6-acetyl) galactoside, Petunidin 3-(6"-oxaloyl) arabinoside. Peonidin 3-(6-acetyl) glucoside, Peonidin 3-(6-oxaloyl) arabinoside. Petunidin 3-(6"-succinyl)rhamnoside, Petunidin 3-acetylglucoside, Petunidin 3-(6"-acetyl)galactoside, Quercetin 3-arabinoside, Apigenin-7-O-glucoside, Delphinidin 3-(6"succinyl)rhamnoside. Peonidin 3-(6"-succinyl) rhamnoside. Delphinidin 3-5 diglucoside, Cyanidin 3- arabinoside</p>	<p>Venancio et al., 2017; Venancio et al., 2016; de Brito et al., 2007; Vargas-Simón, Soto-Hernández. Rodríguez-González &amp; Escalante-Estrada, 2000; Vargas-Simón et al., 2002.</p>

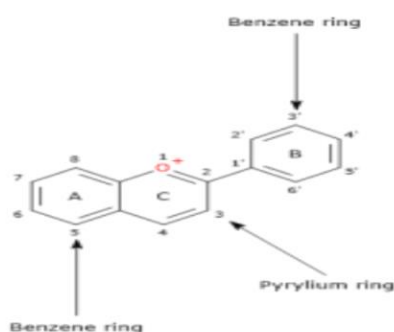
## anti inflammatory activity chart

Part of c.i.l	Extract and dose	Biological activity	Observation	References
steam bark	Aq.200,400mg/kg	Anti-inflammatory	Anti-inflammatory activity similar to indomethacine	Bezerra. Et.al 2014 oo
Fruits	Anthocyanin Lyophilized /400mg/kg/day	Anti-inflammatory	Decrease il 1beta &TNF ALPHA	Venancio almeida and anteus,2018

**ANTHOCYNE:**

Chemical formula:  $C_{15}H_{11}O$  (9)

Structural formula : (9)

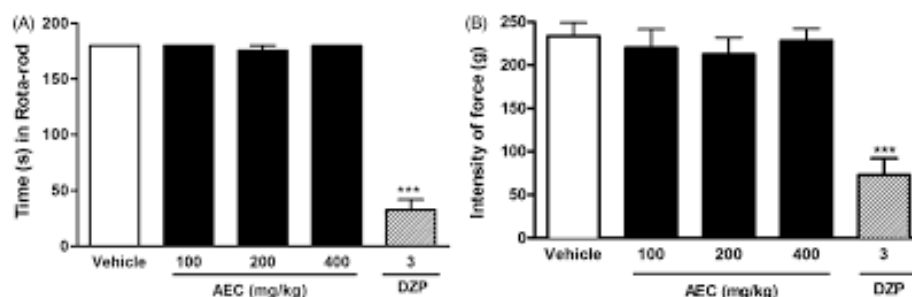
**Discussion :-**

The study was done on whister rat (190-200 kg)(4) by using writhing test (3) . indomethacine and acetylsalicylic acid drugs are used .

The sample was prepared from dried bark and fruit . Aqueous extract of c.i.l was extract by using expression method (4).

The vascular permeability increase by acetic acid known as induce inflammation by release of mediators like pge2 ,histamine,il6,il8.the aq.extract of c.i.l. stop discharge of vasoactive amine and prostaglandin by giving dose 400 mg/kg. (4)

## Graphs :



Effect of aq.extract of C.I.L. leaves 100,200,400 mg/kg . A) Rotarod

(4)

## Conclusion :

The anti-inflammatory effect shown by Anthocynine secondary metabolite from fruit of *chrysobalanus icaco* linn .

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