Flavonoids represent a class of low molecular weight polyphenolic secondary metabolites, which are broadly distributed in plants. They have shown various bioactive effects with basic C6—C3—C6 ring system and substitution patterns which lead a series of subcategory compounds. This review paper summarizes various biological effects of extracts from natural products from traditionally used medicinal plants.

ABSTRACT
Flavonoids represent a class of low molecular weight polyphenolic secondary metabolites, which are broadly distributed in plants. They have shown various bioactive effects with basic C6—C3—C6 ring system and substitution patterns which lead a series of subcategory compounds. This review paper summarizes various biological effects of extracts from natural products from traditionally used medicinal plants.

KEYWORDS: Flavonoid, Medicinal plant, Biological Activity.

INTRODUCTION
Flavonoid, the largest group of common and naturally occurring polyphenolic compounds that are abundantly found in fruits, vegetables and beverages. These pervasive plant secondary products are best known as characteristic colored anthocyanin pigments of plants (1).

Flavonoids are structurally derived from parent 'Flavone' substance which occurs as a white mealy farina on Primula plants. Flavonoids are commonly present in all the vascular plants, attached to sugar as glycosides and only one flavanoid aglycone may be present in a single plant in many glycosidic combinations (2). Flavanoids represent a relatively diverse family of aromatic molecules that are derived from Phenyl and malonyl coenzyme A (CoA; via fatty acid pathway) (3).

Chemistry of Flavonoids
The flavonoid, a class of plant secondary metabolite, are polyphenolic α, β-unsaturated compounds having 15 carbon atoms i.e. two benzene rings joined by a linear three carbon atom chain which may or may not be a part of third ring. The skeleton may be shown as the C5 - C3 - C6 system (diphenyl propanes) (4).

In nature, they occur in free state and as glycoside; most are O-glycoside but C-glycosides are also known are present as glycosidal form. The chemical structures of flavonoids are based on a C10 skeleton having a Chromone ring or benzo-γ – pyrone ring attached to a second aromatic ring 'B' in position 2, 3 or 4 (5). The individual carbon atom is based on a numbering system, with general numeral for 'A' and 'C' but primed numerals for 'B' ring. Primed modified numbering system is not used for chalcones and isoflavone derivatives (6).

Fig 2 Basic Structure of Flavonoid

All flavanoid aglycons have a benzene ring 'A' condensed with a six member ring 'C' which in position -2 carries a phenyl ring 'B' as a substituent. The six membered ring condensed with benzene ring is either a γ-pyrene (flavonols and flavonones) or their dihydro derivatives (Flavanols and Flavanones) The 'B' ring comes from Shikimate pathway and is often hydroxylated in position 3, 5, 7, 3', 4'and 5' (7).

1. Classification of Flavonoids
More than 5000 identified flavanoids, can be broadly classified as (2, 8) -
1. Anthocyanins
Biosynthesis of Flavanoids

Biosynthesis of most flavanoids starts from condensation of p-coumaroyl-CoA molecule with malonyl-CoA to form chalcone in the presence of Enzyme chalcone synthetase (9). Chalcone is then isomerized by enzyme isomerase to flavanone which serves as intermediate to yield different classes of flavanoids (10). Their biosynthesis is ubiquitous in plants and evolved from plant evolution involved in plant protection and signaling (3).

Versatile activity of Flavanoids

Besides their physiological role in plants, they have shown to possess a large array of biological activity like antioxidant, anti-inflammatory, anti-viral (11), anxiolytic, anti-protozoal, anti-mitotic, anti-tumoral (12), anti-tubercul, anti-diabetic (13), cytotoxic activity against a multi-drug resistant cell line, tranquillizers, vaso relaxant activity (14), immunomodulator (15), Skin Protective Effect from UV Radiation (16). Few of them have been summarized in table 1 showing biological effects of extracts from natural products from traditionally used medicinal plants.
Table 1: List Of Flavanoid Content Rich Medicinal Plants

<table>
<thead>
<tr>
<th>Name of Plant</th>
<th>Family</th>
<th>Flavanoid</th>
<th>Active part of plant</th>
<th>Biological Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azadirachta indica</td>
<td>Meliaceae</td>
<td>Quercetin</td>
<td>Flower extract</td>
<td>Anti-cancerous (17)</td>
</tr>
<tr>
<td>Glycerciza glabra</td>
<td>Leguminoseae</td>
<td>Liquritin</td>
<td>Root extract</td>
<td>Antioxidant (18)</td>
</tr>
<tr>
<td>Butea monospermea</td>
<td>Fabaceae</td>
<td>Genistein</td>
<td>bark extract</td>
<td>Antibacterial, Antidiarrhoeal (19)</td>
</tr>
<tr>
<td>Aloe vera</td>
<td>Asphodelaceae</td>
<td>Luteolin</td>
<td>Leaf gel extract</td>
<td>Antioxidant (20)</td>
</tr>
<tr>
<td>Bacopa moneirra</td>
<td>Plantaginaceae</td>
<td>Luteolin</td>
<td>Plant extract</td>
<td>Antioxidant (21)</td>
</tr>
<tr>
<td>Oroxylumindicum</td>
<td>Bignoniaceae</td>
<td>Chrysin</td>
<td>Seed extract</td>
<td>Antibacterial, Antioxidant (22)</td>
</tr>
<tr>
<td>Momordica charantia</td>
<td>Curcurbitaceae</td>
<td>Luteolin</td>
<td>Leaf extract</td>
<td>Antidiabetic (23)</td>
</tr>
<tr>
<td>Tiliacordata</td>
<td>Tiliaceae</td>
<td>Hyperoside</td>
<td>Leaf extract</td>
<td>Anxiolytic (24)</td>
</tr>
<tr>
<td>Mimosa pudica</td>
<td>Mimosoideae</td>
<td>Isoquercetin</td>
<td>Leaf and stem extract</td>
<td>Antibacterial (25)</td>
</tr>
<tr>
<td>Cannabis sativa</td>
<td>Compositae</td>
<td>Luteolin</td>
<td>Leaf extract</td>
<td>Anti-inflammatory (26)</td>
</tr>
<tr>
<td>Andrographis paniculata</td>
<td>Compositae</td>
<td>5-hydroxy-7,8-dimethoxyflavone</td>
<td>Aerial part extract</td>
<td>Antibacterial (27)</td>
</tr>
<tr>
<td>Limnophila indica</td>
<td>Scrophulariaceae</td>
<td>Methoxyflavone</td>
<td>Whole plant extract</td>
<td>Antioxidant (28)</td>
</tr>
<tr>
<td>Brysonima crassa</td>
<td>Malphigaceae</td>
<td>Catechin</td>
<td>Leaf extract</td>
<td>Antiulcer (29)</td>
</tr>
<tr>
<td>Mentha longifolia</td>
<td>Lamiaceae</td>
<td>Apigenin-7-O-glycoside</td>
<td>Leaf extract</td>
<td>Antibacterial (30)</td>
</tr>
</tbody>
</table>

CONCLUSION

Flavanoids having the low molecular weight medicinally active phytoconstituent. Chemically flavonoids containing benzo-γ-pyrones structure, which are a subdivision of a polyphenolic type natural products. Flavonoids are established as functional ingredients and health promoting biomolecules. Various naturally occurring chemical constituents have been proven for prevention and cure of several diseases. Due to structural diversity of flavonoids, it becomes epitome of major pharmacological activities in the era of phytoconstituents. The present review highlights the biological sources, various types of flavonoids and different specific pharmacological activities as antioxidant, anxiolytic, antibacterial, hepatoprotective, anti-inflammatory, anticancer, antiulcer and antiviral.

REFERENCES

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