Comparative Physicochemical Ash Study of Some Medicinal Plants Species of Western Himalaya.

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Research Article

ABSTRACT
Air dried powdered plants material were evaluated for their comparative physicochemical ash content study of Berberis aristata (Root), Toona ciliata (Bark), Rhododendron arboreum, Alpinia Speciosa (Leaves), Thuja orientalis (Leaves), Cedrus deodara (Bark), Lantana camara (Leaves), Hemidesmus indicus (Leaves), Curcuma amada (Rhizome). The higher extent of Total ash (Physiological ash and Non-physiological ash) were found in Rhododendron arboreum Bark (12.224±0.101), while higher extent of Water soluble ash were found in Toona ciliata Bark 4.049±0.088, while higher content of Non-Physiological ash (acid insoluble ash) was found in Lantana camara Leaves (2.276±0.186).

Keywords: Medicinal Plants, Physiological and Non-physiological ash.

INTRODUCTION
In a Western Himalaya region various plants species Viz. Berberis aristata, Toona ciliata, Rhododendron arboreum, Alpinia Speciosa, Thuja orientalis, Cedrus deodara, Lantana camara, Hemidesmus indicus, Curcuma amada are commonly found, these plants species are been known for their therapeutic importance. Quality control methods of medicinal plant materials include Physicochemical ash analysis as a parameter use for Quality, Purity and Safety, define as the ash left after ignition, which helps to determine the physiological ash and Non-Physiological ash content. The Physiological ash is derived from the plant tissue itself and Non-Physiological ash, which is residue of extraneous matter (e.g. Sand and soil) adhering to the plant surface. Following study perform in way of their comparative nature of physicochemical ash of some medicinal plants belongs to same habitat.

MATERIALS AND METHODS
Collection and Authentication of Plants Material
Plant materials, Curcuma amada (Rhizome), Toona ciliata (Bark), Rhododendron arboreum (Flower, Bark, Leaves), Alpinia Speciosa (Leaves), Thuja orientalis (Leaves), Cedrus deodara (Deodar bark), Lantana camara (Leaves), Berberis aristata (Root), Hemidesmus indicus (Leaves) was collected in Month of March. Authentication and Preparation of herbarium specimen voucher was done by proper authentication procedure. Processing of Plants material
Plant parts were allowed to air dry in shade and converted in uniform powder form by using milling machine at room temperature.

Physiological and Non-Physiological ash Include Total ash, Acid Insoluble and Water soluble ash content was done as per reference procedure.

RESULT AND DISCUSSION
Comparison of Physicochemical ash In the Plant species, Physicochemical ash analysis evaluated by determination of Total Ash, Water soluble ash, Acid insoluble ash, Berberis aristata (Root); Total ash was found 2.663±0.445, Water soluble ash 1.426±0.263, Acid insoluble ash 0.798±0.117.

Toona ciliata (Bark); Total ash was found 8.317±0.195, Water soluble ash 4.049±0.088, Acid insoluble ash 0.521±0.114.

Rhododendron arboreum (Flower, Leaves and Bark); Total ash was found higher in Bark 12.224±0.101, than leaves 4.359±0.245 and Flower 3.123±0.105. While water soluble ash was found in higher extent in Flower 1.95±0.078, Than Bark 1.668±0.131 and leaves 0.926±0.088. Acid insoluble ash was found in Bark 1.226±0.095 than Flower 0.929±0.021 and Leaves 0.619±0.101.

Alpinia Speciosa (Leaves); Total ash was found 5.745±0.133, Water soluble ash 2.718±0.2, Acid insoluble ash 1.101±0.081.

Thuja orientalis (Leaves); Total ash was found 5.594±0.275, Water soluble ash 2.718±0.195, Acid insoluble ash 1.161±0.146.

Cedrus deodara (Deodar bark); Total ash was found 3.278±0.144, Water soluble ash 2.148±0.203, Acid insoluble ash 1.601±0.214.

Lantana camara (Leaves); Total ash was found 10.507±0.589, Water soluble ash 1.363±0.123, Acid insoluble ash 2.276±0.186.

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Hemidesmus indicus (Leaves); Total ash was found 5.885±0.971, Water soluble ash 1.368±0.123, Acid insoluble ash 0.854±0.065.

Curcuma amada (Rhizome); Total ash was found 5.279±0.859, Water soluble ash 2.233±0.146, Acid insoluble ash 1.191±0.275.

Comparison of Physicochemical ash In the Plant species, Total ash was found as a decreasing order as Rhododendron arboreum Bark (12.224±0.101), Lantana camara (10.507±0.589) Toona ciliata (8.317±0.195), Hemidesmus indicus Leaves (5.885±0.971), Alpinia Speciosa Leaves (5.745±0.133), Thuja orientalis Leaves.
Table 1: shows the Total ash, Water soluble ash, Acid insoluble ash.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Plant Name</th>
<th>Total ash (w/w)</th>
<th>Water soluble ash (w/w)</th>
<th>Alcohol insoluble ash (w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Berberis aristata (Root)</td>
<td>2.663± 0.445</td>
<td>1.426± 0.263</td>
<td>0.798± 0.117</td>
</tr>
<tr>
<td>2</td>
<td>Toona ciliata (Bark)</td>
<td>8.317± 0.195</td>
<td>4.049± 0.088</td>
<td>0.521± 0.114</td>
</tr>
<tr>
<td>3</td>
<td>Rhododendron arboreum (Flower)</td>
<td>3.123± 0.105</td>
<td>1.95± 0.078</td>
<td>0.929± 0.021</td>
</tr>
<tr>
<td>4</td>
<td>Rhododendron arboreum (Leaves)</td>
<td>4.359± 0.245</td>
<td>0.926± 0.088</td>
<td>0.619± 0.101</td>
</tr>
<tr>
<td>5</td>
<td>Rhododendron arboreum (Bark)</td>
<td>12.224± 0.101</td>
<td>1.668± 0.131</td>
<td>1.226± 0.095</td>
</tr>
<tr>
<td>6</td>
<td>Alpinia Speciosa (Leaves)</td>
<td>5.745± 0.133</td>
<td>2.718± 0.2</td>
<td>1.101± 0.081</td>
</tr>
<tr>
<td>7</td>
<td>Thuja orientalis (Leaves)</td>
<td>5.594± 0.275</td>
<td>2.718± 0.195</td>
<td>1.161± 0.146</td>
</tr>
<tr>
<td>8</td>
<td>Cedrus deodara (Deodar bark)</td>
<td>3.278± 0.144</td>
<td>2.148± 0.203</td>
<td>1.601± 0.214</td>
</tr>
<tr>
<td>9</td>
<td>Lantana camara (Leaves)</td>
<td>10.507± 0.589</td>
<td>1.363± 0.123</td>
<td>2.276± 0.186</td>
</tr>
<tr>
<td>10</td>
<td>Hemidesmus indicus (Leaves)</td>
<td>5.885± 0.971</td>
<td>1.368± 0.123</td>
<td>0.854± 0.065</td>
</tr>
<tr>
<td>11</td>
<td>Curcuma amada (Rhizome)</td>
<td>5.279± 0.859</td>
<td>2.233± 0.146</td>
<td>1.191± 0.275</td>
</tr>
</tbody>
</table>

Figure 4: Shows the comparative analysis of Total ash, Water soluble ash and Alcohol insoluble ash, in the species and in between the species.

(5.594±0.275), Curcuma amada Rhizome (5.279±0.859), Rhododendron arboreum Leaves (4.359± 0.245), Cedrus deodara bark (3.278± 0.144), Rhododendron arboreum Flower (3.123± 0.105), Berberis aristata Root (2.663±0.445), Comparison between Total ash, Water soluble ash, and Acid insoluble ash was shown graphically (Fig1).The total ash method is designed to measure the total amount of material remaining after ignition. This includes both "physiological ash", which is derived from the plant tissue itself, and "non-physiological" ash.² Water soluble ash as Toona ciliata Bark (4.049± 0.088), Rhododendron arboreum Flower (3.123±0.105), Alpinia Speciosa Leaves (2.718± 0.2), Thuja orientalis Leaves (2.718± 0.195), Curcuma amada Rhizome (2.233±0.146), Cedrus deodara Bark (2.148±0.203), Rhododendron arboreum Bark (1.668±0.131), Berberis aristata Root
(1.426+ 0.263), Hemidesmus indicus Leaves (1.368+ 0.123), Lantiana camara Leaves (1.363+ 0.123), Rhododendron arboareum Leaves (0.926+ 0.088), Water-soluble ash is the part of total ash soluble in water. Comparison between Water soluble ash and water insoluble ash showed graphically (Fig2). Acid insoluble ash as Lantiana camara (Leaves) 2.276+ 0.186, Cedrus deodara Bark 1.601+ 0.214, Rhododendron arboareum Bark 1.226+ 0.095, Curcuma amada Rhizome 1.191+ 0.275, Thuja orientalis (Leaves) 1.161+ 0.146, Alpinia Speciosa Leaves (1.101+ 0.081), Rhododendron arboareum Flower (0.929+ 0.021), Hemidesmus indicus Leaves (0.854±0.065), Berberis aristata (Root) 0.798±0.117, Rhododendron arboareum (Leaves) 0.619±0.101, Toona ciliata (Bark) 0.521±0.114, Acid-insoluble ash is the residue obtained after boiling the total ash with dilute hydrochloric acid, and igniting the remaining insoluble matter. This measures the amount of silica present, especially as sand and siliceous earth. Comparison between acid insoluble and Acid soluble ash was shown graphically (Fig3). Total ash represents the total content of Physiological ash and Non-Physiological ash, Water soluble ash represents the content of Total ash soluble in hot water, Acid insoluble represents the Non-physiological ash specially Sand and Soil. Now it is clear that Physiological ash should be the part of ash which apart from acid insoluble, comparison between Total ash, Water soluble ash, Water insoluble ash, Acid soluble ash and Alcohol soluble ash was shown graphically (Fig4).

CONCLUSION
Physicochemical ash analysis of Medicinal plants is a parameter of Quality control, Total ash content revealed with the Physiological and Non-Physiological ash, which was found to be higher in Rhododendron arboareum Bark (12.224± 0.101), and Acid insoluble ash revealed with the extraneous matter Non-physiological content generally for siliceous earth (Sand and Soil) was found to be higher in Lantiana camara (Leaves) 2.276± 0.186, Water soluble ash revealed with the part of Total ash which is soluble in water was found in higher extent in Toona ciliata (Bark) 4.049± 0.088 . In a general the order of Non-physiological ash content as Lantiana camara (Leaves) 2.276± 0.186, Cedrus deodara Bark) 1.601± 0.214, Rhododendron arboareum Bark 1.226± 0.095, Curcuma especia Rhizome 1.191± 0.275, Thuja orientalis (Leaves) 1.161± 0.146, Alpinia Speciosa Leaves (1.101± 0.081), Rhododendron arboareum Flower (0.929+ 0.021), Hemidesmus indicus Leaves (0.854±0.065), Berberis aristata (Root) 0.798±0.117, Rhododendron arboareum (Leaves) 0.619±0.101, Toona ciliata (Bark) 0.521±0.114, and the extant of water soluble ash content was found to be higher in Toona ciliata Bark (4.049+ 0.088), Alcohol soluble ash was found to higher in Rhododendron arboareum Bark, studies concludes that’s following study helps to check Quality, and Purity in the plants species, and it also helps for future studies related with Plants character, effect of environmental changes in the plants species.

ACKNOWLEDGEMENT
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